

Technical COMMUNICATION

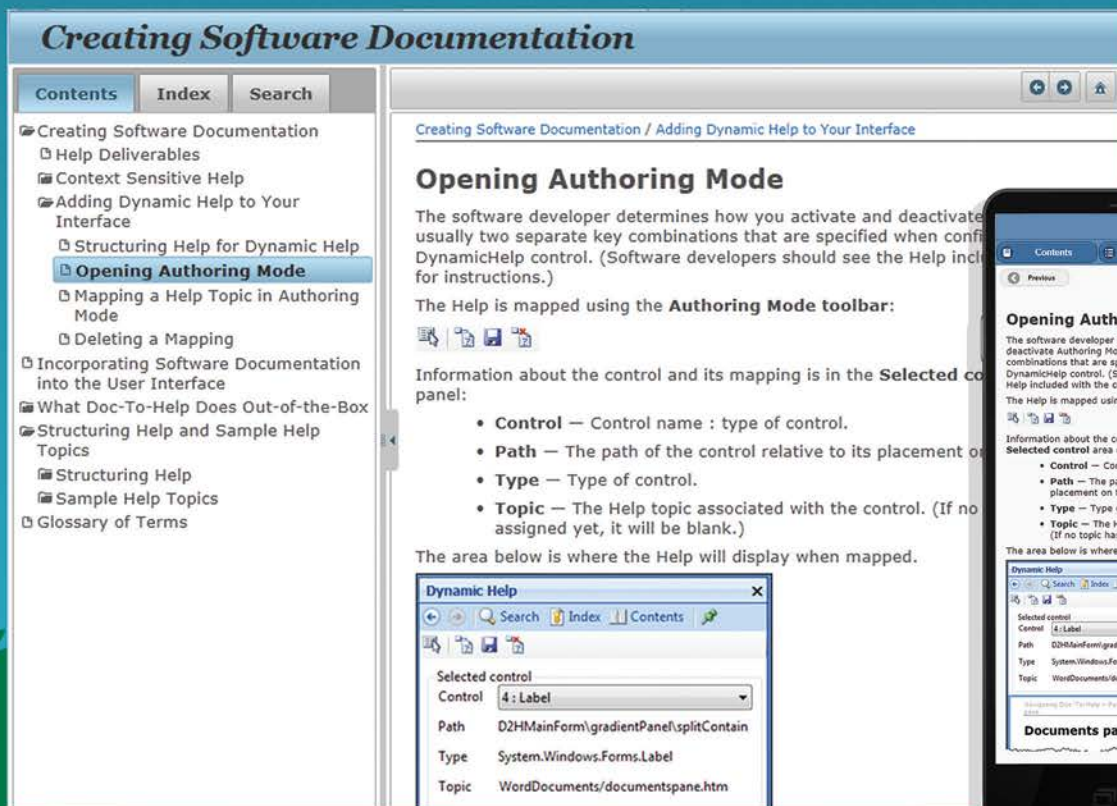
Journal of the Society for Technical Communication

SUSTAINABLE PRACTICES FOR DEVELOPING A BODY OF KNOWLEDGE



Special Issue

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The Society for Technical Communication is the largest association of technical communicators in the world. STC is currently classifying the Body of Knowledge for the field and communicating the value of technical communication. Its volunteer leadership continues to work with government bodies and standards organizations to increase awareness and accurate perception of technical communication. Membership is open to all with an interest in technical communication. Visit the STC Web site (www.stc.org) for details on membership categories, fees, and benefits.

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Journal of the Society for Technical Communication

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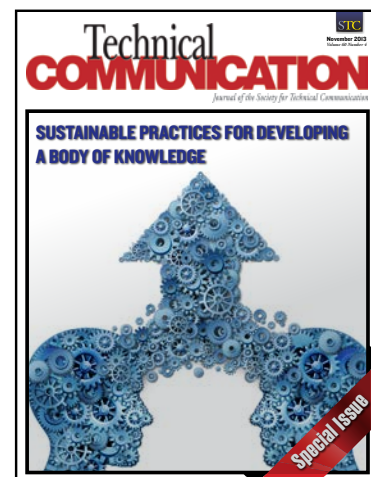
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About the Journal

Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

- **Applied research** – reports of practically relevant (empirical or analytical) research
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The purpose of *Technical Communication* is to inform, not impress. Write in a clear, informal style, avoiding jargon and acronyms. Use the first person and active voice. Avoid language that might be considered sexist, and write with the journal's international audience in mind.

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Sustainable Practices for Developing a Body of Knowledge

Hillary Hart and Craig Baehr

Abstract

Purpose: This special issue attempts to situate the Technical Communication Body of Knowledge (TCBOK) within the framework of other bodies of knowledge to understand the relationship between a profession and its BOK. The issue also investigates how approaches such as developing taxonomies, engaging communities of practice, and constructing framing metaphors can inform the evolution and content strategy for a body of knowledge or an organization-specific knowledge base.

Method: Reviewing the literature on developing bodies of knowledge and consulting with academics and practitioners on specific developmental goals and objectives for the TCBOK led us to posit three areas for focused investigation: constructing information taxonomies, engaging users and developers as a community of practice, and employing conceptualizing metaphors that can guide development without sacrificing complexity.

Results: The articles' explorations of content strategy, information taxonomies, and user engagement are shown to be relevant for developing both company-specific information standards and field-wide bodies of knowledge. We leave open the question of whether use of conceptualizing metaphors belong more to construction of a BOK than to a set of standards.

Conclusions: The TCBOK is a healthy, maturing collaborative project, which perhaps indicates we have matured as a field, and explains who we are and what we do as a field. It articulates the boundaries of knowledge in our field and the value added to the profession. Continued development and maintenance of TCBOK will benefit from continuing research into the relationship that professions sustain between their body of knowledge and disciplinary practices in the field and in the academy.

Keywords: body of knowledge, knowledge bases, user engagement, information standards, conceptualizing metaphors

Practitioner's Takeaway

- Developing a body of knowledge includes many of the skills and practices unique to the work technical communicators do.
- The boundaries of a body of knowledge are determined by the tacit practices, skills, experiences, products, processes, and interdisciplinary knowledge that define the field.
- A mature body of knowledge asks more than “what knowledge do we include?”; it also asks “what practices will sustain and add value?”
- Developers of information standards can use many of the approaches outlined here.

Sustainable Practices for Developing a Body of Knowledge

Defining a Body of Knowledge

It is 2013, and anecdotal evidence tells us that most practitioners and teachers of technical communication (TC) still have some trouble explaining what it is that they do. Even after numerous calls for “professionalizing” the field of TC (Rainey, 2005; Rainey et al., 2005; *Technical Communication* Special Issues, November 2011 and February 2012), for moving toward “a coherent body of knowledge” (Spinuzzi, 2005); and even after the launch of an effort to create an accessible body of knowledge by volunteer members of the Society for Technical Communication (chronicled in Coppola, 2010)—technical communicators still encounter the blank looks ... “technical *what?*” Perhaps it is time to take a hard look at the concept of “body of knowledge” as it defines a profession, a disciplinary field, or even an organization-specific set of standards. Why and how do bodies of knowledge become constructed and accepted? When do they tend to arise in the history of a profession? Is a body of knowledge the product (the repository of the collected information) or is it something more?

Let us start by positing that a body of knowledge can be developed and codified within and for any organization or disciplinary community. This codified knowledge exists in various forms including knowledge bases, portals, documented practices, written standards,

to name a few. When the body of knowledge (BOK) defines a field, it serves to mark that particular field as a *profession*. The boundaries of that knowledge are often interdisciplinary and include theories, practices, standards, research, and general information both tacit and codified. From our review of how knowledge bases and bodies of knowledge are developed, it seems that in all cases, developers must make decisions about how the information is organized (taxonomies), vetted (construction and maintenance), and represented (metaphors, personas, and so forth).

This special issue of *Technical Communication* brings together four articles representing a diversity of perspectives on the care and maintenance of bodies of knowledge, including the need for them in the first place. Because technical communication is such a situated field, dependent on particular settings for the development and deployment of particular practices, the authors are from both the academy and industry, and each article focuses on a different aspect of what our initial investigation revealed of how contemporary bodies of knowledge are developed. It seems that developers of all knowledge bases must grapple with at least two goals:

1. Develop a workable taxonomy;
2. Develop a process of construction based on the developers’ conceptions of how to collect and prioritize information: who will be involved?

Table 1. A Comparison of Features of Three Bodies of Knowledge

Features	ASCEBOK American Society of Civil Engineering (2004 and 2008)	PMBOK Project Management Institute (1996; 5th edition, 2013)	SWEBOK IEEE Computer Society (2004; 3rd edition “coming soon”)*
Taxonomy	24 outcomes divided into 3 categories: foundational technical professional	5 groups of processes 10 Knowledge Areas (KAs)	10 Knowledge Areas classified by Vincente’s engineering taxonomy and Bloom’s pedagogical categories
Builders	ASCE and hand-picked “experts”	Project Management Institute and volunteers	Teams of experts plus comments by “hundreds” of stakeholders
Framing metaphors	“Raise the bar” “Knowledge base”	“Frameworks” “Foundation of profession”	“Strawman” “Stoneman” “Ironman” (3 phases of development, as described in 1999)

And developers of field-wide bodies of knowledge must work on a third goal:

3. Frame the project using concepts and metaphors that ensure the BOK is “a living and dynamic corpus of work” (Coppola & Elliot, 2013)

Thus, three of the articles herein focus on one of these three goals, while the fourth helps us parse some of the differences between an organization-specific knowledge base (or set of standards) and a field-wide body of knowledge.

We examine briefly, in this editorial introduction, the development of a Body of Knowledge (BOK) in several fields and attempt to locate the under-construction Technical Communication Body of Knowledge (TCBOK) in the recent history of how bodies of knowledge have emerged and for what purposes. Three current BOKs stand out for their relationship to technical communication and their differing approaches to achieving the three goals above: the American Society of Civil Engineering Body of Knowledge (ASCEBOK), the Project Management Body of Knowledge (PMBOK), and the Software Engineering Body of Knowledge (SWEBOK). In their foundational documents, developers of these BOKs see themselves as constructors of a knowledge base that attempts to capture the essential concepts, skills, theories, and practices that define the particular field. The features of these BOKs are listed in Table 1. The major trend we see in these data is that the more recent BOKs (PMBOK and SWEBOK) tend to have greater numbers of “builders.”

For the American Society of Civil Engineers (ASCE), “A body of knowledge (BOK) represents a strategic direction and foundation for a learned profession, defining the knowledge, skills, and attitudes/attributes necessary to enter practice at the professional level” (ASCE, 2012). In the case of ASCE, the body of knowledge serves as the repository of information from which both licensure examinations and academic programs draw their content. The primary purpose of the ASCEBOK is to ensure that engineers entering practice are adequately prepared and have proven their preparedness by becoming licensed. Indeed, the ASCEBOK, originally published in 2004 and revised in 2008, was created

in response to new standards promulgated by the professional association; it is intended to form the foundation of the licensure process. The ASCEBOK is determined by experts (60 of them in the last go-round) and in the 2008 version, the BOK is codified into 24 “outcomes” for learning. These outcomes are then divided into three categories: *foundational* (mathematics and humanities, for instance), *technical* (materials science, problem recognition and solving, for example), and *professional* (communication, teamwork, and so forth).

The Project Management Body of Knowledge (PMBOK), on the other hand, is constructed around processes: each of the five groups of processes (47 in all) defines skills, tasks, and knowledge required for a specific phase of a project. This taxonomy makes good sense because the common denominator for this field is the *project*, which must be initiated, planned, executed, monitored, and closed. The PMBOK is also organized around 10 Knowledge Areas (KAs). This BOK, which serves as the basis for eight different certifications, was developed by the Project Management Institute with help from volunteers.

The *Guide* to the Software Engineering Body of Knowledge (SWEBOK) organizes itself around 10 Knowledge Areas, which are then classified according to “the taxonomy of engineering design knowledge” proposed by Walter Vincenti (1990, p. 37) and also the pedagogical categories attributed to Benjamin Bloom (1956). Teams of experts in the field developed the KAs, but the resulting taxonomy and the first *Guide* were submitted to hundreds of stakeholders for comment, in keeping with the SWEBOK developers’ commitment to transparency and consensus “by all significant sectors of the relevant community” (p. 42). Such consensus has resulted in an additional 5 KAs (15 total) for the 3rd edition (not yet published).

That commitment to consensus is shared by the TCBOK developers, and it is ambitious: gaining “consensus” on what constitutes a field as broad as technical communication is, and continues to be, difficult. A body of knowledge for any field tests the boundaries of that field; it attempts to define the knowledge that has become part of common practices, standards, and theories that inform the work that field entails. Responding to a survey distributed to its members by STC in 2007, technical-communication professionals cited industries as

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diverse as insurance; merchant wholesalers; software publishers; and independent artists, writers and performers. And their job titles ranged from online help developer to graphic artist to content strategist to translator. Defining a profession involves delineating the boundaries of skills and knowledge necessary to practice, which means defining what may be related but not central disciplines that the field nonetheless draws upon. Other BOKs, such as the SWEBOK, outline these boundaries in their defining document (1999). In that same 2007 STC survey, respondents listed these related disciplines for TC: organizational management, project management, computer science, human factors, and information technology. That is quite a broad range of knowledge areas. As for industries worked in, technical communicators work everywhere, from chemical manufacturing to education to software publishers. Breadth of the field is not the only, but it is certainly a major, challenge in developing a BOK for technical communication. Table 2 outlines the TCBOK features, using the same categories as in Table 1. We can notice that the metaphors for TCBOK are somewhat softer than for the other BOKs—"personas" as opposed to "bar," "foundation," "base," "stoneman." The TCBOK taxonomy is still in flux, however, and has not yet been published on a public site (see Baehr, "Content Strategy," in this issue, for more detailed information on content strategy and the TCBOK), though the development site is open: <http://stcbok.editme.com/>.

Table 2. Features of the Technical Communication Body of Knowledge (TCBOK)

Features	TCBOK Society for Technical Communication (2007-2013)
Taxonomy	Four major areas: About Technical Communication Careers Producing Technical Communication Research
Builders	Facilitators and stakeholders, ranging from novice to expert
Framing metaphors	"Interdisciplinary" "Personas"

Of course, organizing information is what technical communicators do. The various TCBOK teams have brought to the development of a body of knowledge their experience with and application of the best practices in the field. Thus the developers are determined to prepare a "guide" that is easily accessible, well organized, searchable, and—most of all—continually being vetted and expanded by practitioners in the field. Not just by a few designated experts, but by anyone who has experience (whether in academia, industry, non-profits, and/or government) and wishes to contribute.

Unlike other BOKs, the intent of the TCBOK is not to codify a set of skills either for certification or as a way to assess educational programs; certification and program assessment, which the three BOKs described above have led to, are related but very different projects that may or may not grow out of the TCBOK (TC certification is currently in its beginning stages). The goal of the TCBOK project is to create a way for professionals to collaborate on defining for employers, educators, the government, and technical communicators themselves what defines technical communication as an interdisciplinary and evolving profession. The TCBOK project has a six-year history and dozens of technical communicators who have served as advisors, contributors, and volunteers in its continuing development. In 2012-2013, a new team took on the next phase in the project's development to restructure content, promote social engagement, and establish new publication and editorial policies.

All in all, developing the TCBOK has presented many challenges that happen to be central to the work technical communicators do. These commonly shared practices include content management, user-centered navigation, information structuring, online publication policies, and social engagement practices. To design, structure, administer, and engage volunteers in the knowledge portal, the team had to make use of a wide range of theoretical perspectives including user experience design, structured authoring, information modeling, social capital theory, knowledge management, information findability, communities of practice, and social media integration.

This special issue aims to explore these perspectives and practices more broadly in developing bodies of knowledge for technical communication, within individual corporations as well as professional associations. Development of the TCBOK provides

a case study in integrating practice and theory to develop an accessible, flexible, and continually evolving corpus that is nonetheless authoritative and reliable. But TCBOOK is only a fairly large example of the issue every knowledge organization confronts: how to elicit, organize, and make accessible the standards, concepts, skills, and practices that define the knowledge base of that organization, whether a Fortune 500 company or a professional association representing a disciplinary field seeking to be recognized as such. Individual articles in this issue examine the construct of a body of knowledge from the perspectives of its conceptualization; the role of social engagement (social media integration and interpersonal engagement); decisions about content strategy, including information modeling and knowledge management; and the process of developing organization-specific practices, knowledge resources, and standards.

Conceptualizing a Body of Knowledge

We all know that metaphors are powerful ways of getting at truth without sacrificing nuance. The metaphor of “body of knowledge” is especially interesting in the way it combines a concrete word for an organic being (“body”) with one of the most abstract of words (“knowledge”). Applied to technical communication, the metaphor delineates the very nature of the profession: the “head” that develops content strategies, information bases, and so forth, and the “heart” that remains always an advocate for the user. In their article, “Conceptualizing the Technical Communication Body of Knowledge—Context, Metaphor, and Directions,” Nancy Coppola and Norbert Elliot draw on research on the power of metaphor not only to make meaning but to stabilize knowledge and guide scientific theory and practice. In technical communication, metaphor can also serve as a teaching tool to disseminate complex ideas to the public.

Beginning with an explication of “body of knowledge” as a metaphor suggesting “a living and dynamic corpus of work,” this article provides a conceptual analysis of the TCBOOK initiative by focusing on metaphors of relational variables and trading zones. In the authors’ exegesis, the formative variables of the TCBOOK attempt to define the core knowledge areas and their detailed “facets.” Drawing on others’ use of variable

models, Coppola and Eliot construct a model for the intersection of the domains of technical communication with specific settings. The outcome of the relationships examined by the model is best practices. To develop a model sufficiently useful for establishing the scope of TC practice, however, the authors propose expanding the model to include both ways of producing knowledge: the traditional way generated primarily in an academic setting and the 21st century version in which knowledge creation is “transdisciplinary and often socially produced.” Both types of knowledge may be easily shared within the digital space of the TCBOOK, but to foster easy collaboration of academics and practitioners to produce new knowledge, the authors propose their second operative metaphor: an interactive trading zone in which the two groups may “trade one another’s expertise in order to solve a specific problem.”

Trading zones map out boundaries of disciplinary knowledge based on the function and unique skill set of the individual technical communicator. These zones operate “as a digital ecology in which various stakeholders may develop new ways of engaging the variables of technical communication.” As the authors demonstrate, creating “knowledge exchanges fostering collaboration and negotiation” was important to development of the TCBOOK; their model seeks to extend this practice as TCBOOK grows, paying increased attention to intrapersonal and interpersonal domains of TC. These domains include “intellectual openness” and “conscientiousness” (intrapersonal) as well as “collaboration and leadership” (interpersonal). We find compelling the authors’ final recommendations for maintaining, improving, and advancing the TCBOOK as the field advances.

Ensuring Community Engagement and Building Social Capital

Joel Kline and Thomas Barker have documented in this journal the social history of developing the TCBOOK from 2007-2011 (Kline & Barker, 2012). They found that the original organizational framework was successful in helping teams collaborate and create sustainable practices, which in turn, led to a heightened sense of professional status and value added information products. What eventually slowed down work on the TCBOOK was a diminution—once the nitty-gritty

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content gathering, tagging, and creating began—of fellowship and excitement among the members of what was a community of practice.

In their article, Konstanze Alex-Brown and Joel Kline explore this framework (and others) within socially-mediated workplaces in developing and maintaining knowledge assets. They propose a model that integrates socially-mediated tools (technology), communities of practice for knowledge sharing (human networks), and social capital (value-added knowledge assets) to leverage organizational knowledge sharing within knowledge bases. Their article examines the results of two studies to determine best practices for integrating tools, networks, and knowledge. Their findings suggest that organizations focus on four important goals: negotiating shared practices, sustaining community, building a diverse community, and encouraging shared discourse. The value-added benefits include an increase in the ability to innovate, compete, network, and collaborate using the knowledge assets relevant to the organization's work.

Strategizing Content and Constructing Information Taxonomies

Building a knowledge base or a body of knowledge requires a coherent content strategy, and key to that is building a usable information taxonomy with a range of tools that meet both user expectations and information-gathering needs. Information taxonomy models support content strategy by guiding authors in content creation, facilitating reuse of content, and supporting adaptive content (Rockley & Cooper, 2012). Some of the domain areas, representative of the content assets in TCBOK's information taxonomy, include the following: information management, information design, information development, instructional design, user experience, visual design, technical writing, technical editing, and usability testing. This list is by no means complete but represents the current, evolving taxonomy present within the existing body of knowledge project.

As a metaphorical construct, the body of knowledge represents all that is assumed to be known in the field, its boundaries, trends, and possibilities; knowledge that is both tacit and documented. A knowledge base, on the other hand, is a tangible, codified information

product, with a systematic approach, sustainable process, navigable interface, and findable content. In Figure 1 each rectangle represents a different knowledge domain, such as information design, usability, technical editing, which overlap and comprise the entire body of knowledge. The center darker square represents the boundaries of the codified product (TCBOK) as a knowledge base. In actuality, the shapes are likely not as rigidly defined, but more amorphous, since it is difficult to draw distinct boundaries in such knowledge. Other codified (and smaller) knowledge bases, such as journal article libraries, documented standards, white papers, may exist either inside or outside the shaded region.

Figure 1. Comparison of Boundaries of a Conceptual Body of Knowledge and a Codified Knowledge Base



Sustainable practices that involve ongoing participation from subject matter experts, students, industry practices, and emerging research, are important to the overall content strategy for the TCBOK project. The process of developing and sustaining this content strategy requires analyzing users, content, organizational needs, processes, and technology (Rockley and Cooper, 2012). In "Developing a Sustainable Content Strategy for a Technical Communication Body of Knowledge," Craig Baehr explores the complexities of a sustainable content strategy for the TCBOK project, including its integral role with regard to information findability, information taxonomies, and user preferences. In a case study approach, the article examines factors that affect content strategy in a fairly mature, large-scale knowledge base project, the TCBOK. It outlines specific content strategy goals, including: collecting user feedback; examining other technical

communication taxonomies; and discussing decision making practices as they affect information taxonomies, navigation tools, and working prototypes. The article finds that as a knowledge base (and its user base) matures, an effective content strategy may require a hybrid approach in balancing both user preferences and technological feasibility and in managing a successful and sustainable product.

Developing and Implementing Standards

One of the decision points for developers of a professional body of knowledge is to determine whether what is being built is really a knowledge base of standards or a body of knowledge. PMBOK has come close to morphing into a set of standards. Or at least the newest version of its Guide, titled *PMBOK Guide and Standards*, insists that “PMI’s global standards are the foundation of the profession” (PMI, 2013). Standards are important for many industries and many products—for safety, for consistency, and so forth. Whether a body of knowledge can be constructed as a set of standards is open to question. Certainly within a particular corporation, standards make sense for products, whether information products or other kinds, but if Coppola and Elliot’s definition of the metaphor that is *body of knowledge* (“a living and dynamic corpus of work”), is accurate, then surely a BOK goes far beyond standards in its content and its content management, to say nothing of breadth of its user (and developer) base.

Since, from its very first inception, the TCBOK was envisioned as a collaboration of academic and industry practitioners, we felt it important to include in this special issue an article entirely from the perspective of industry practice. The article by Bob Vitas explains how IBM information developers have created community-driven information quality standards. Developed by a council of experts, these standards were developed by internal and external experts in the IBM information development community. Standards used were classified into three categories: corporate (specific global requirements), information quality (specific to the information development community), and as-required (specific only in certain situations). The overarching theme of this initiative was to enhance the total information experience for the customer by ensuring higher levels of quality, value, and user experience.

The many challenges associated with implementing and tracking compliance with the standards included the variability of contributing authors, differing customer expectations, and the necessity that some standards had to be broader and higher level than others, to name a few. While the initiative is just getting started, this article offers many insights and practices toward developing standards that account for corporate requirements, customer needs, and information development community practices. From our viewpoint as academics interested in understanding the practices of TC in specific settings, it was especially intriguing to read Bob Vitas’ account of the decision to build the standards “with a grass-roots approach,” ensuring that the entire community of Information Development professionals were intimately involved in the process.

Conclusions

It seems to us that any body of knowledge is much more than a collection of knowledge assets collected and networked in codified form. It exists beyond these boundaries in the tacit practices, skills, experiences, products, processes, and interdisciplinary knowledge that define the field. A mature body of knowledge asks more than “what knowledge do we include?”; it also asks “what practices will sustain and add value?” In the case of the TCBOK, these practices include content strategy, social engagement, information standards, and metaphorical constructs that govern how we map out our future.

For technical communication, the TCBOK represents a codified product that is healthy and maturing. The attempt to develop such a collection of knowledge assets for the profession indicates we have matured as a field, and perhaps grown beyond the identity crisis of what to call ourselves or how to explain what we do as professionals. That is one purpose of the TCBOK—to articulate this value and to map the boundaries of knowledge in the profession. There is still much to be done—both for the BOK itself and the field. Other knowledge assets must be discovered and integrated to help further expand the TCBOK’s value. And research should continue to explore the relationship that professions sustain between their body of knowledge and specific disciplinary practices in the field and in the academy.

Sustainable Practices for Developing a Body of Knowledge

It is our hope that the articles in this issue on bodies of knowledge and knowledge standards contribute to the ongoing conversation about how to define the field of technical communication or at least create spaces where boundary delineation can be negotiated by the community of all TC practitioners: those from the academy, industry, government, non-profits ... and all those who travel back and forth between those settings.

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Conceptualizing the Technical Communication Body of Knowledge: Context, Metaphor, and Direction

Nancy W. Coppola and Norbert Elliot

Abstract

Purpose: The Technical Communication Body of Knowledge (TCBOK) is a landmark effort in our profession. To support next-generation development efforts, a framework is proposed that will benefit the profession: integration with national efforts to develop knowledge taxonomies; conceptualization through metaphor; and application through imagined user groups (personas) and the communication tasks (genres) they commonly perform.

Method: As an instrumental case study, the TCBOK can be understood and expanded through the complementary metaphors of relation and trading zones. Both metaphors are examined through a scenario of use for two personas.

Results: While presently designed as taxonomy of knowledge, the TCBOK might be expanded through an ecological framework that embraces complexity of design and use.

Conclusions: Three recommendations are provided that may help provide direction for TCBOK development: (1) Continue the use of persona as a key strategy for information development, but add high-quality genre models of best practice; (2) Expand attention from focus on cognitive competency domains to include intrapersonal and interpersonal domains; (3) Consider the knowledge portal as an opportunity to expand on other current efforts to articulate knowledge taxonomies.

Keywords: genre; professionalism; metaphor; TCBOK; persona

Practitioner's Takeaway

- While certification allows validation of individual developed ability, the TCBOK provides systematic advancement of knowledge for our profession.
- Because there are multiple national efforts to articulate bodies of knowledge, positioning the TCBOK along these centralizes our profession, allows development across professions, establishes an agenda for applied research, and charts a path for growth.
- Development of knowledge in technical communication can be expanded by the use of metaphor, a powerful yet often unrecognized conceptual tool.
- Growth for STC membership can be identified by exploring the personas developed by TCBOK founders and investigating the ways those personas use genres in their daily lives.

Conceptualizing the Technical Communication Body of Knowledge

Introduction

The Technical Communication Body of Knowledge (TCBOK) is a landmark event for our profession. An initiative sponsored by the Society for Technical Communication, the TCBOK was designed between 2007 and 2009 (Coppola, 2010). Using a multi-method approach, academic and professional leaders used mapping, card sorting, affinity diagramming, and shareholder analysis to identify core knowledge areas for technical communication. Concurrently, the founders also conceptualized personas, each of whom would use the TCBOK for reasons as diverse as the personas themselves. Identification of knowledge domains and user personas allowed an unprecedented level of span and specificity for stakeholders. In 2012, a new team took on the task of reconsidering content, promoting engagement, and establishing communication practices.

In support of this initiative, we have taken on three tasks in this article: to position the TCBOK among other fields of knowledge; to conceptualize it through metaphor; and to identify directions for its future. As part of a campaign for professionalization that ranges from medicine to project management, we begin by historically situating the TCBOK to suggest the importance of attention to communication processes, public support, and systematic review. We then turn to a simultaneously abstract and important part of the TCBOK in its current developmental stage: the use of metaphor. Based on our experience with applied metaphors, we suggest the use of two complementary conceptualizations. The first, variable relationships, ensures a relational design for the TCBOK, which fosters an ecological approach incorporating a situated stance of deeply contextualized inquiry. Building on the first metaphor, we then explore the second—trading zones—as a way to establish resonance between knowledge area and persona. We close our article with recommendations for future development of the TCBOK and its use in educational and occupational settings. As an instrumental case (Stake, 2006), the TCBOK allows an excellent way for readers of *Technical Communication* to reflect on the current status of their profession, its processes of conceptualization, and its future.

Context: Positioning the TCBOK among Other Fields of Knowledge

Educational historian Ellen Condliffe Lagemann (1983) has told the remarkable story behind Abraham Flexner's *Medical Education in the United States and Canada* (1910). A study that shaped a profession, Flexner's report finds its origin in the market: the medical profession wanted to increase the supply of doctors. Concurrent with expansion, practitioners also believed that new educational patterns were needed to ensure better medical services. Put in terms of medical diagnosis, there was a hemorrhage: Between 1870 and 1914, approximately 15,000 physicians (roughly half of the medical workforce) received their advanced training in Germany, where specialization had resulted in advanced research and innovative techniques. With loss of market and quality, the American Medical Association realized it needed an external presence with prestige to help secure its future. Medical leaders approached the president of the Carnegie Foundation for the Advancement of Teaching, Henry Smith Pritchett, to sponsor a study that would establish a path for the profession. Returning from Germany himself in 1908, educator Abraham Flexner was recruited to visit the nation's 115 medical schools and write the final report. As Lagemann correctly observes, Flexner focused on "reconstruction," advancing a reformed medical education. Emphasizing quality as a way to secure the market and promote specialization, the report had a stunning impact: weak medical schools were closed and funding sources were identified to increase the quality of others. The key to the future of professionalism seemed to rest on standards that were clearly communicated, publicly supported, and systematically maintained.

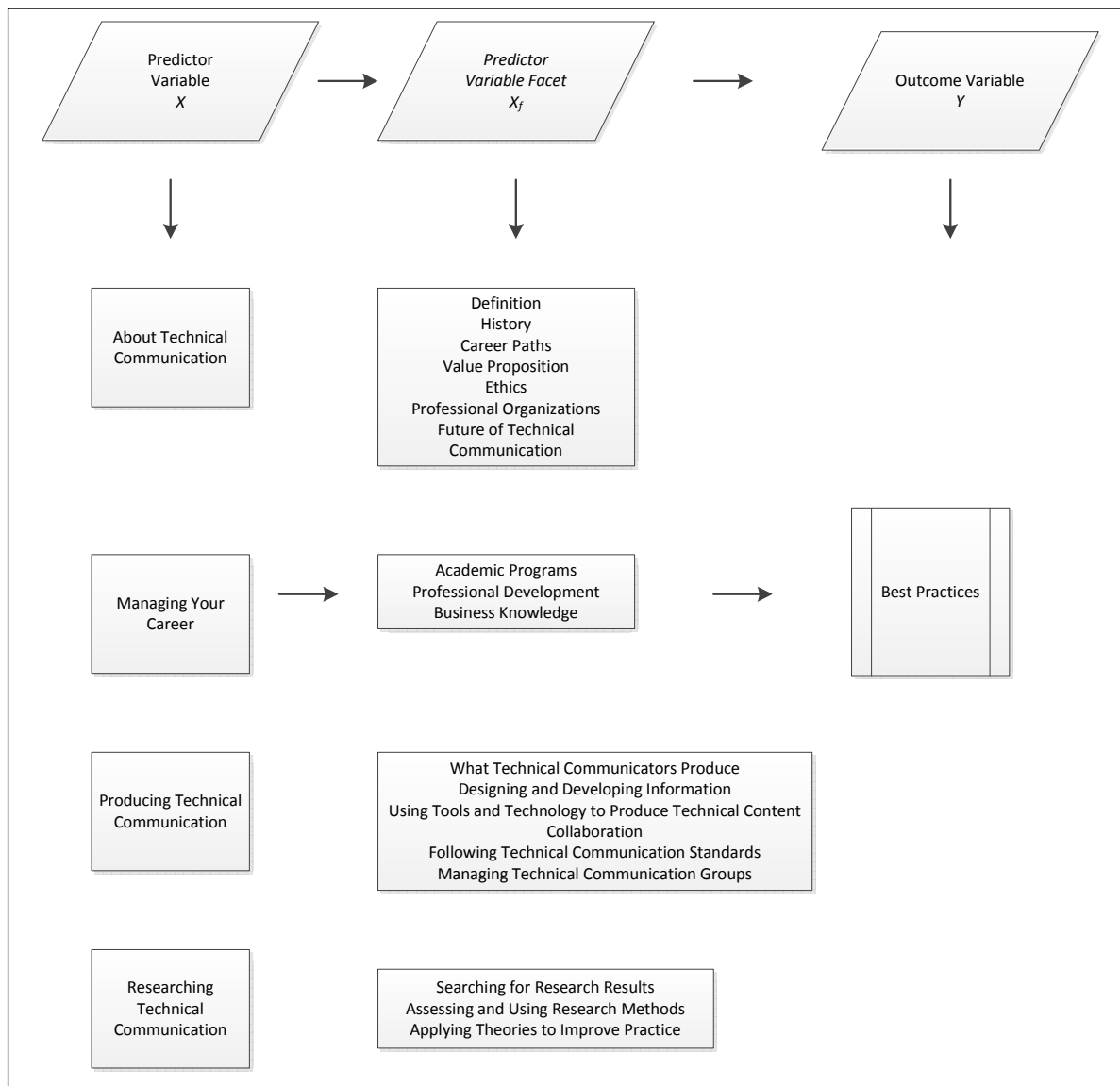
In the process of developing their goals for professionalization of the field, the first generation of technical communication scholars read Flexner (1915). Israel Sweet (1957) and Israel Light (1961) both looked to Flexner whose definition of a profession included the requirement of having a well-defined, specialized body of knowledge (Malone, 2011) such as that available to Germany's physicians. In the sixty years that have passed since technical communicators created the first professional organizations and journals in technical communication, the profession has made solid progress in developing a specialized

body of knowledge and creating communication outlets (for example, professional conferences and journals) for documenting, exploring, and critiquing it. When we consider that our profession takes its origin in post-war America—and not in the time of the Roman physician Galen—we may characterize our responsiveness as excellent.

A fellow profession, project management—like technical communication born in the defense industry with civilian credentials developed later—has a similar early history in developing its body of knowledge.

Project management had its professional beginnings in 1969 with the formation of the Project Management Institute (PMI). In 1981, the PMI board's president submitted a recommendation that PMI “define a body of knowledge to establish project management as a unique discipline and independent profession” (Change Management Solutions, 2008, p. 7). PMI then established a research group to determine what a body of knowledge might look like; semantics became an early roadblock as the group tried to come to a consensual definition of “project.” Persevering,

Figure 1. Technical Communication Body of Knowledge Initiative: A Variable Model



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the group produced a white paper in 1987 in an attempt to document generally accepted project management information and practices. It would be nine years before the first formal document, *The Project Management Body of Knowledge* (now titled *A Guide to The Project Management Body of Knowledge [PMBOK ©Guide]*), was published and with it the standard terminology and guidelines for project management (American National Standards Institute, 2013). The Fourth Edition (2008) was recognized by the Institute of Electrical and Electronics Engineers (IEEE, 2011) and the Fifth Edition by the American National Standards Institute (ANSI) as an American National Standard (BSR/PMI 99-001-2013). Now in its Fifth Edition (2013), the *PMBOK ©Guide* represents a well-established profession and a growing organization with over 700,000 members.

Clearly, the success of the project management body of knowledge is reflected in the organization's certification—its systematic maintenance—launched in 1984. The PMI 2012 Annual Report cites more than 500,000 active Project Management Professional, or PMP®, credential holders, most of whom use the *PMBOK ©Guide* to prepare for certification and to guide their practice.

Careful readers will note the comparison among the Flexner report and the PMBOK, on one hand, and the TCBOOK on another. All three have in common two of the three elements of professionalism: communication processes and public support. However, our profession has not addressed the third element, systematic maintenance, until very recently. One way of addressing monitoring—certification—is currently underway with the Certified Professional Technical Writer™ and Certified Professional Technical Communicator™ programs. While certification is one way to secure standards of practice, we want to focus on securing the TCBOOK, and by that, the future of our profession by turning to present conceptualization and future direction. We believe that there are distinct yet equally compelling ways of ensuring systematic advancement of professional standards through robust processes of conceptualization. To put it very directly, certification will allow validation of individual developed ability, but attention to the standards themselves requires another path.

Metaphor: Mapping the Metaphors of Relation and Trading Zone

We live by our metaphors. Often seen as a rhetorical turn, in reality metaphor is a process of cognition with meaning-making, invention, and knowledge-stabilizing functions (Gentner & Grudin, 1985; Kahneman, 2011; Lakoff & Johnson, 1980; Leary, 1990). For technical communication, Giles (2008) has shown that metaphor serves a descriptive, explanatory, and predictive function guiding scientific theory and practice as well as serving as a pedagogical tool to disseminate complex ideas to the public. A body of knowledge is itself a metaphor, suggesting a living and dynamic corpus of work with a distinct spatial orientation (Ruiz de Mendoza Ibáñez & Hernández, 2011). Focusing on the power of metaphor, strategies and practices for developing bodies of knowledge can be designed such as that shown in Figure 1.

Figure 1 depicts the TCBOOK as a series of variables, those categories that are at the center of empirical research traditions in the social sciences. For Bernard (2013), a variable is defined as “something that can take more than one value, and those *values can be words or numbers*” (p. 28). We can, for example, account numerically for the STC membership. But if we ask one of those members to tell us about her field of specialization, her answer will come back in words: computer applications, medical procedures, or environmental regulations. It is this sense of variation that is Odendahl (2011) emphasizes in her definition. While “a variable is a trait, attribute, or characteristic,” it can “vary across different entities” (pp. 208-209).

In moving from definition to application, we can conceptualize the TCBOOK as a series of formative variables—a stew, as the National Research Council has recently labeled them (2012)—of core knowledge areas and their detailed facets. Developed by experts, this stew contains the elements of technical communication. Because they are in a stew, these variables swirl in their relationships to each other.

The nature of that swirl, of course, is best fixed if we wish to investigate the nature and extent of the relationships among the variables. It is here that we can extend the spatial orientation and suggest a model for the TCBOOK of predictor variables (or *X*, the independent variables) that contribute to a defined outcome (or *Y*, the dependent variable). Finding its

origin in the field of educational assessment, testing, and measurement, just such a variable model has been used by the authors in their program of empirical research in professional and technical communication (Coppola & Elliot, 2007, 2010). The variable model has also been recently proposed as a way to conceptualize writing program assessment (White, Elliot, & Peckham, in press). In our experience, variable models—defined in the case at hand as a series of domains that have been identified by experts as predictors of success for the practice of technical communication—have proven an excellent way of establishing our field in the stew knowledge dispersion resulting from our many publications and diverse practices. As we identify the domains of the construct of technical communication (the predictor variables), we can then further define the way that those domains are interpreted in specific settings (the individual facets of those variables). Once established, the model is then able to be examined empirically for its strength and refined as relationships among the variables are examined over time.

Figure 1 gives the generic framework of a variable model that will gain specificity in Figures 2 and 3. The first column of Figure 1 provides the four core knowledge areas for technical communication in the TCBOOK: knowledge of the profession, career management, knowledge production, and research. We have identified these as predictor variables. Using the framework of the National Research Council, we have then identified the variables in the second column as facets of the predictor variables. Defined as a series of factors that may be inter-correlated, each of these facets gives precise definition to the predictor variables. For example, in the TCBOOK the broad predictor variable (X)—producing technical communication—is broken down into six facets (Xf): genre production; design and development; technology; collaboration; adherence to standards; and group management. These facets include both cognitive (for example, design and development) and interpersonal (for example, collaboration) domains. In turn, these facets lead to the desired outcome of the relationships. In this case, the implicit outcome for the TCBOOK is best practice.

In Figure 1, the outcome variable is broadly labeled because of space limitations. But the website presently supporting the TCBOOK provides many paths for enumeration of best practices. The variable of knowledge

production and its facets, for instance, includes the following best practice outcomes: documents that explain products, services; and policies that communicate basic scientific and technical information, that train users to develop skills, and that market products and services. Thus, reading Figure 1 from left to right we can see that the predictor variables and their articulated facets lead to desired outcome of optimal practice that can, in turn, be broken down into very precise best practices.

When applied to the TCBOOK, the variable model yields three benefits. First, the four core knowledge areas are seen as relational, not categorical. That is, the many facets of the predictor variables are seen as inter-related, not as discrete categories that bear no relationship to each other. Second, as the history of educational measurement has shown (Brennan, 2006), variable models readily lend themselves to a wide range of empirical analytic techniques of both qualitative and quantitative orientation. As such, the TCBOOK can be empirically investigated over time in specific settings and thus firmly established and improved through collaboration. Third, the variable model is ecological. As MacMillan (2012) has proposed, research informed by an ecological perspective allows a situated stance of deeply contextualized inquiry in which relationships are neither idealized nor simplified. We cannot therefore readily state that a change in Xf can “cause” a change in Y without considering the host of factors, both individual and institutional, that could also contribute to the change. Because the variable model is ecological, it provides, as MacMillan concludes, “a much more satisfying description of what actually happens” in a particular setting (p. 359)—an approach that answers the reservations raised by Blakeslee and Spilka (2004) regarding the lack of practical relevance of academic research to realistic work contexts. Ultimately, because the variable model embraces complexity, it is appropriate for the complex undertaking presently underway for the TCBOOK.

Alone, however, the variable model is insufficient for our profession, and reference to the STC definition of communication (2013) reveals the reason. “What all technical communicators have in common is a user-centered approach to providing the right information, in the right way, at the right time to make someone’s life easier and more productive.” As De Jong (2012) has proposed, “technical communication is an instrumental

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discipline: a discipline that eventually seeks to contribute to the effectiveness of communicating about technology, a discipline that aims to support technical communication practitioners in their jobs. It is a discipline that, so to speak, resembles medicine more than biology” (p. 91). A socio-cognitive act mediated by users, technical communication is best understood in terms of variables that are made meaningful in specific contexts.

Establishing context through boundary delineation within a scope of practice is a critical aspect of achieving disciplinary identification, professional status, and individual identity (Brady & Schreiber, 2012; Coppola, 2011, 2012). For practicing professionals, STC worked with the Bureau of Labor Statistics (2013) to provide a separate chapter for technical writers in the *Occupational Outlook Handbook*, thereby defining technical writers as distinct from other writers. For academics, the Classification of Instructional Programs in the United States (National Center for Educational Statistics, 2013) now has one code for all instructional programs in Professional, Technical Business, and Scientific Writing (23.1303). These boundaries provide autonomy for a profession, demarcating efforts to exclude other occupations from acting within the discipline, and a source of competitive differentiation. Just as it did for Flexner, a body of knowledge can serve these exclusionary strategies and regulate the supply of capable practitioners.

However, this boundary work that professions engage in often impedes knowledge transfer across borders. Communication barriers exist between different disciplines with embedded practices and ways of thinking that have been successful at tackling certain kinds of problems. When a new problem or opportunity arises—such as converging technologies—that does not fall into one of the traditional disciplinary buckets, practitioners from different fields may find they have fundamentally different perspectives on it, including whether there really is an opportunity. And the traditional model of professionalism, which maintains centralized control and exclusive ownership over information, works against the pluralistic notion of the public good.

Indeed, social theorists Michael Gibbons and his colleagues (Gibbons, Limoges, Nowotny, Scott, Schwartzman, & Trow, 1994) assert that industrialized societies are moving from knowledge production in the academy (Mode 1) to knowledge generation

in multi-institutional arenas (Mode 2). Mode 1 is traditional knowledge generated within a disciplinary, cognitive, and primarily academic context. Mode 2 knowledge is generated in a context of application; it is transdisciplinary and often socially produced. Mode 2 knowledge is produced by teams outside of traditional academic settings that are brought together, often in a scientific laboratory, to solve a problem that spans more than one discipline. The quality control methods for each mode of new knowledge production are equally unique, with traditional expert review for Mode 1 and more novel methods for Mode 2 such as value added, cost savings, or market competitiveness.

Needless to say, a dynamic digital knowledge portal for the TCBOOK provides an opportune space for content produced by both modes of knowledge—a rich opportunity for academics and practitioners to produce new knowledge together, knowing that the outcome must respond to market criteria as well as academic rigor. For such Web-based spaces to be truly useful, however, a second complementary metaphor is needed: trading zones.

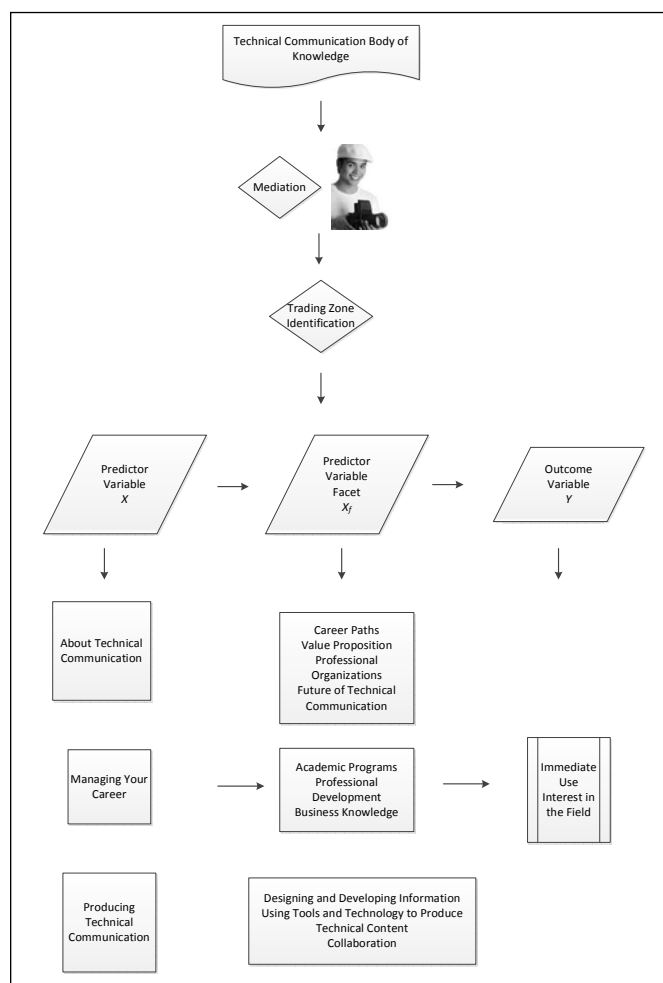
Peter Galison, the Pellegrino University Professor in History of Science and Physics at Harvard University, (1997) was a pioneer in studying what happens when very different disciplinary communities have to work together. Galison developed the metaphor of trading zone to explain how scientists and engineers from different disciplinary cultures manage to collaborate across apparently incommensurable knowledge paradigms. He studied the development of radar, detectors, and particle accelerators and found that different expertise communities had to develop a way to talk across boundaries that are characterized by their disciplinary jargons. Galison found that trading partners hammer out a local language despite global difference in order to coordinate their actions. His example of MIT's Radiation Laboratory shows how physicists combined their conceptual knowledge with the algebraic strategies of engineers that led to a shared language. With stability and trust, over time the new language emerged as the new field of microwave physics. Building on Galison's evolution of a common language, Gorman (2010) identifies characteristics of trading zones that include goods traded (predictor variables such as time, resources, knowledge and skills) and a boundary object or system that embodies a common goal (such as the outcome of best practices).

Distinct from an outcome, a boundary object has a tactile quality associated with genre—a Web site, for example, or a set of procedures.

Defined as a digital ecology in which various stakeholders may develop new ways of engaging the variables of technical communication, the trading zone metaphor makes good sense for the TCBOK. Users can enter the trading zone with interests and interpretations of their own, seeking to find something that will suit their purposes. Indeed, we can see an instance of a trading zone when the first TCBOK task team came to the goal of establishing the early information architecture for the portal with widely varying knowledge and skill sets (Coppola, 2010). The ten collaborators, five academics and five practitioners, posted notes to a discussion board on research methodologies, taxonomies, project management, content strategies, and learning styles—each speaking rather different languages. One talked about waterfall vs. agile software development, another offered the standards of Accreditation Board for Engineering and Technology (ABET), and still another spoke of XML structured authoring. They spent a good deal of time trying to figure out what to call the portal—Web of Knowledge, Map of Knowledge, Network of Knowledge—a conversation that masked the underlying tension of divergent knowledge bases. The rhetorical context of audience and purpose prevailed, however, when the team began to describe the main users of the knowledge portal. Only when the group was tasked with developing personas and scenarios of use for the various stakeholders of the TCBOK did its members begin to find a common language to develop a place where they could trade knowledge. Specificity of end-user need had lent detail to the broad foundation of core knowledge areas for technical communication.

Galison draws from anthropology in his explanation of the trading zone, and his analysis is useful for us: “Anthropologists are familiar with different cultures encountering one another through trade, even when the significance of the objects traded—and the trade itself—may be utterly different for the two sides” (p. 803). They may exchange fish for baskets, for example, and find common ground on the quality, quantity, and type that constitute an equal trade. The two different cultures can share some activities while diverging on many others. In the local context of the trading zone, the two groups come to consensus about the procedure of exchange and determine when goods are equal to one another.

Figure 2. Technical Communication Body of Knowledge Initiative: Trading Zone Model with High School Persona



Following Galison, imagine if the traditional sub-cultures of technical communication—academics and practitioners—could form an interactive trading zone within the TCBOK to tackle a local problem that might constitute a boundary object. Ignoring tensions of larger differences, the two groups need to trade one another’s expertise in order to solve a specific problem. The transaction is thus not static but interactive, and the outcome is ever emerging—with traders ready for new transactions leading to new, more suitable outcomes.

Drawing on the metaphor of trading zones and the initial experience of the ten collaborators, we now explore how researchers and practitioners of the TCBOK community might continue to develop trading zones through knowledge exchanges fostering collaboration and negotiation. Figure 2 provides a model of such a trading zone.

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Trading Zone Model with a High School Persona

The persona of Eric Hernandez, a junior high school student interested in Web design, is an especially good way to understand how the TCBOK, mediated by persona, can be conceptualized as a trading zone. Seventeen-year-old Eric, as the TCBOK founders imagined him, is someone who has taken all his high school's technology computer courses and found that he has developed an appetite for something he has yet to name. He has designed Web sites for athletics and student government, and taught himself Dreamweaver and Photoshop. He has good aesthetic sense and loves to learn. His desire is framed in this way: "I'd love to major in something in college that will let me do this fun stuff, make a decent salary, and become a real Web design expert." In a potential scenario of use, Eric would do a Google search at the direction of his high school counselor, find STC and the TCBOK, and click on *Producing TC* as the tab of choice. His experience in designing Web sites would lead him to the subtopic *Tools and Technology to Produce Technical Content*. He would find the appropriate categories for the information he seeks—tools for authoring and tools for publishing content such as the Adobe Creative Suite—and he might find evidence of best practices that will help him add value to a future employer. Trading zone metaphors allow us to expand this scenario of use.

But there is another scenario of use operating for Eric and most other high school students in the United States, one that is enforced by the Common Core State Standards Initiative (CCSSI) (National Governors Association, 2013). A curricular model led by the National Governors Association Center for Best Practices and the Council of Chief State School Officers, the CCSSI is presently positioned to play a definitive role in education from kindergarten through grade 12. Adopted by 45 states and three territories, the Standards are designed to align school, post-secondary, and workplace expectations, thus yielding a system of national standards and providing consistency in articulation of student learning expectations in English Language Arts and mathematics.

While the CCSSI is the central K-12 initiative of our time and we applaud its potential, it nevertheless sets standards that are out of step with the needs and desires of students such as Eric. In the case of English Language Arts, the standards rely heavily on the traditional academic genre of the essay rather than the array of

communication genres practiced in the workplace. As well, the CCSSI does not readily align to the *College and Career Readiness Standards for Adult Education* (Pimentel, 2013). The disjuncture between school and workplace would be apparent to Eric, who is interested in both academic and workplace knowledge.

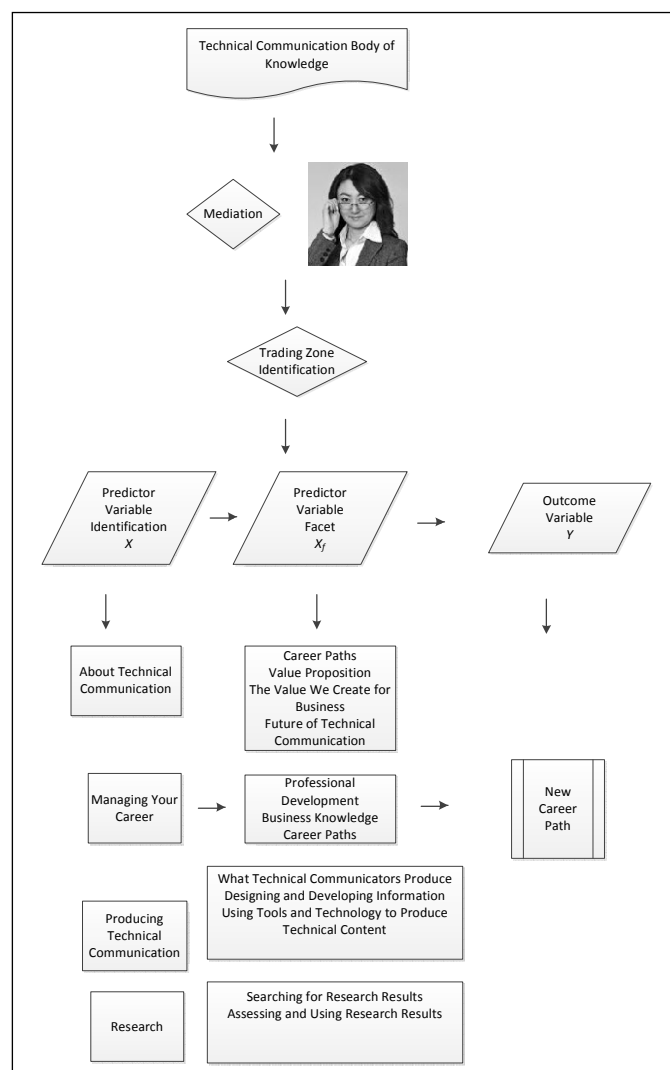
Based on his profile, Eric might not be especially interested in learning how to write essays to his teacher through the established language arts framework that is core to the CCSSI; he would be very interested, however, in learning how to design Web sites to serve the needs of a wide variety of audiences through a technical communication framework.

Here is where the TCBOK portal could provide critical resources for an underrepresented population that is being poorly served by rigid standards. Eric will be interested, as Figure 2 illustrates, in facets such as career paths, academic programs, and information design. He might not be especially interested in research, however, at the point of first contact in which he discovers the pragmatic continent of the TCBOK after sailing from the academic island of the CCSSI. He would certainly be very interested in immediate use of information, whether that information led to better use of Photoshop or selection of a college. Because the metaphor of trading zones is conceived as relational, TCBOK sponsors could use the results of surveys and interviews to assure that the portal design for high school students such as Eric would be useful. As an additional design feature for the portal, social media could be used to link Eric's cognitive and interpersonal talents to others of his age, rather than relying on professional special interest groups that may not fully understand his needs. Under such a framework, Eric's world is no longer a series of standardized categories; rather, his is a communication ecology in which deeply embedded and meaningful influences—from social forces influencing individual behavior to genres reflecting broad professional use—swirl around him—ready to be identified, questioned, understood, used, and improved.

Trading Zone Model with a Mid-Career Persona

How might a trading zone be designed for someone at the other end of the timeline who is mid-career and wants to change directions? Linda Etesh, another of the 20 TCBOK personas, is a 20-year Information Technology (IT) professional who is thinking about transitioning to technical communication. Figure 3

Figure 3. Technical Communication Body of Knowledge Initiative: Trading Zone Model with Mid-career Persona



describes how a trading zone might be understood in terms of her user needs.

As a network and database administrator in the data center of a major bank, Linda has had to document procedures and configurations. She finds that she enjoys the writing aspect of her work more than the IT administration. Her aptitudes for writing and technology lead her in the direction of technical communication, and she finds the STC homepage in an internet search. A search query for career paths takes her to the TCBOK where she sees that this field, like IT, has many career paths and that having technology experience is a plus. She is intrigued.

Linda accepts the shortcomings of the *Career Paths* page and its laundry list of possible career paths, and turns to *Value Proposition*. As an experienced professional, she knows that best practices in any field are mediated by the value added for the employer. Moreover, she is hoping that her employer might support additional training so that she could assume the new position within her current organization; being able to provide metrics for measuring the value added would be important to her career. Linda's expectations of the knowledge portal are justifiably high. In 2008 when working in Alberta, Canada, she joined Canada's Association of Information Technology Professionals (CIPS) and became certified as an Information Technology Certified Professional.

Her learned competencies in another field, however, might prove confusing as she tries to navigate the TCBOK. Two additions on the portal designed for her user group might be beneficial. Far from a novice, she would benefit from a *Crosswalk* tab such as the one created by O*Net, the American Job Center Network (2013) in which she could align information from the *Occupational Outlook Handbook*, the *Dictionary of Occupational Titles*, and the *Standard Occupational Classification*. Similarly, a library of documents from key genres—in her case, models of procedures developed in MadCap Flare—would allow Linda to establish connections between her present skills and the skill level needed to create high-level instructions using state-of-the-art software.

When applied to the TCBOK, the trading zone model yields two benefits. First, the trading zone model is congruent with the variable model and thus yields the advantages of establishing relationships, designing empirical studies for validation of model assumptions, and fostering an ecological view toward the TCBOK. Second, the trading zone model allows a sense of great specificity in structuring knowledge portals for TCBOK users. By establishing archetypal audiences, information may be provided that is highly useful, thus rendering the portals as pathways to the profession.

Direction: Imagining a Common Future

We have attempted to show how the TCBOK might continue to lead our field through a process of systematic advancement. As we have suggested, the TCBOK and its digital knowledge portal can provide dynamic content developed in collaboration between

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workplace and academic professionals. To continue the process, we close with three recommendations that may provide direction to future development efforts.

Recommendation 1: Consider the addition of genre as a way to make the TCBOOK more specific in both *Xf* and *Y*. While the present use of persona should remain a key strategy for information development, genre remains an equally important way to understand our profession. As researchers from Miller (1984) to Spinuzzi (2004) have demonstrated, genre mediates intention, exigency, and context, thus providing a way to understand organizational structure and professional behavior (Coe, Lindgard, & Teslenko, 2002). While defined by labels, both the predictor variable facets and the outcome variables remain generalized due to the absence of high-quality genre models of best practice. Examples of Web sites created in the Adobe Creative Suite and procedures in MadCap Flare would, we believe, be invaluable to users such as Eric Hernandez and Linda Etesh, especially if the models were accompanied by videos of academic and industry leaders describing their value. While even the most carefully crafted statements of best practice and rubrics for their development will remain general, examples of best practice—embodied in genres representative of our profession and explicated by our leaders—would go a long way in helping us explain ourselves to others. If the TCBOOK is understood as providing a taxonomy of our profession, then attention to genre yields idiographic representation—detailed instances in which broad categories are rendered with great specificity by individuals working in defined contexts.

Recommendation 2: Consider expanding the TCBOOK by attention to the cognitive, intrapersonal, and interpersonal domains of *X*, *Xf* and *Y*. At the present, attention is overwhelmingly paid to the cognitive dimensions of our profession, with some attention to the interpersonal domain. Adoption of an organizing concept such as that developed by the National Research Council (2011) would allow investigation of three broad competency domains—cognitive, intrapersonal, and interpersonal—in our profession. While crystalized performance such as writing remains central, of

similar importance are the unexplored domains of clusters such as intellectual openness, work ethic and conscientiousness, and positive core self-evaluation (the intrapersonal domain) and collaboration and leadership (the interpersonal domain). This expansion of the TCBOOK would allow systematic, empirical development of our field along lines that are currently being understood as 21st century competencies, thus centralizing the STC effort. As well, inclusion of these three domains would give a fuller picture of our profession to others, especially if the model genres were also explained in terms of the full spectrum of behavioral domains in which they were created.

Recommendation 3: Consider centralizing the TCBOOK with other initiatives that attempt to develop nomothetic span. Defined as the taxonomy of a profession, nomothetic span is a term with a rich history (Windelband, 1894) and contemporary applications (Embretson, 1983). In terms of communication, projects such as the CCSSI (National Governors Association, 2013), the *Framework for Success in Postsecondary Writing* (O'Neill, Adler-Kassner, Fleischer, & Hall, 2012), and the *College and Career Readiness Standards for Adult Education* (Pimentel, 2013) have at their center attention to the cognitive, and sometimes the intrapersonal and interpersonal domains, of knowledge. That is, these efforts attempt to capture a nomothetic span of knowledge. Envisioning the TCBOOK as a complementary effort allows centralization of our profession among others, encourages others to consider our views in developing their own present and future knowledge taxonomies, and opens the possibility of funding from the U.S. Department of Education for research and development.

Ranging from identification of financial support to exploration of largely unknown research areas, the challenges to the future of the TCBOOK are substantial and readily identifiable. The initiative is nevertheless well begun and inherently useful to a wide variety of communities. The use of context and metaphor is a promising way to support the present effort, to imagine a common future for our profession, and to make that future a reality.

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The Social Body of Knowledge: Nurturing Organizational Social Capital via Social Media Based Communities of Practice

Joel Kline and Konstanze Alex-Brown

Abstract

Purpose: To develop a theoretical model that layers community structure on top of employee social media engagement to improve social capital. This improved social capital leads to tacit knowledge sharing.

Method: The proposed theoretical model is grounded in previously published research on organizational social capital and communities of practice, relevant literature, and survey research. The authors examine aspects of their previous research in social media and communities to build a theoretical model.

Results: The theoretical model shows the congruent outcomes that occur when using social media to establish communities of practice to address the problem of sharing tacit knowledge within an organization.

Conclusions: Communities of practice can form an important bridge between social media technology and people within an organization. Technical communicators can layer communities of practice on the top of social media for an effective strategy to develop increased social capital to support innovation, communication, and body of knowledge efforts.

Keywords: organizational social capital, communities of practice, social media, innovation, tacit knowledge, virtual community

Practitioner's Takeaway

- Technical communicators typically have the content development skills, access, and knowledge to direct these processes.
- Roles associated with internal communication increase the strategic activities for technical communicators within the organization.
- Technical communicators can play a role in the combination of people, technology, and knowledge to increase an organization's ability to innovate and thus stay competitive.

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Introduction

Digital communication technologies have changed workplace communication (Spilka, 2010). Internal communication in organizations is no exception and has undergone several important shifts. Carliner (2010) has noted that there has been a massive move to publish organizational content online and, second, organizations increasingly seek dialogue and feedback from employees via social, digital communication technologies, such as corporate blogs, micro-blogs, wikis, discussion forums, and social networking sites. Large corporations in the US, such as Intel, Dell, IBM and Starbucks, have adopted social media tools designed for employee social engagement (Postman, 2009). The use of social communication technologies for employee communication has begun to change the way knowledge flows within an organization and how bodies of knowledge are created. Social communication technologies generate new social structures to form social capital, that is the sum of knowledge related resources available to individuals and the collective that are embedded within a network of relationships. Highly relevant for an organization are research findings that link organizational social capital directly to organizational efficiency, the ability to share knowledge, and innovation (Inkpen & Tsang, 2005; Tsai, 2001; Tsai & Ghoshal, 1998).

The problem of sharing the knowledge in the minds of employees inside an organization—tacit knowledge—is well documented. One result of this problem is the challenge for an organization's body of knowledge to access the knowledge that resides in the minds of its people. One common model for knowledge transfer in the organization is the SECI model forwarded by Nonaka and Takeuchi (1995). The SECI model holds that people inside organizations create and transfer knowledge through a process that spirals around four exchanges: socialization, externalization, combination, and internalization. Significant to the creation and transfer of knowledge in the SECI model is the concept of tacit knowledge, described by Michael Polanyi as "... we know more than we can tell" in his work *The Tacit Dimension* (Polanyi & Sen, 1983). Bodies of knowledge struggle when it comes to codifying the knowledge in the heads of people. Consequently, the connection of people to one another is often offered as a solution. Thus, the formation of social capital between people in

an organization can play a critical role in connecting the knowledge in the heads of people to other people who need that knowledge. Our model seeks to build a connection between social media, communities, and social capital to facilitate the knowledge exchange that companies need to create and share knowledge and ultimately to make it readily accessible in a body of knowledge.

The role of the technical communicator in fostering social capital is a topic with little data and more speculation. Although the trends show increased presence of digital communication technologies in the workplace, the outcomes are not always clear. Survey research recently conducted by Kline indicates that over 50% of employees at all levels of the organization—staff, management, and executives—do not believe their company has a clear process for innovation communication. This article presents a structured model for the formation of social capital through the effective use of social media to form communities of practice. To build this model, we utilize social capital and community of practice literature and build on the findings of three case studies: the first and second on organizational social capital and social media use within an organization and the third on communities of practice within organizations. Baehr and Alex-Brown (2010) examined how a corporate blog, used for employee communication, changes the formation of online social structures and organizational social capital at a large, global IT organization, Dell Inc. Alex-Brown (2011) conducted a large scale follow-up study to examine how a corporate blog and a corporate micro-blog can generate the three aspects of organizational social capital. Results indicate that both technologies under examination have the ability to facilitate the formation of all three dimensions of organizational social capital; however, they do so in different ways and to different degrees of magnitude and also vary by communicative usage model. The third study conducted by Kline and Barker (2012) examined the elements of communities of practice (CoPs) for efficient knowledge exchange. Kline and Barker (2012) researched Wenger's (1998) characterization of communities of practice in the community of a Body and Knowledge project for the Society of Technical Communication. Wenger's dimensions of *joint enterprise*, *mutual engagement*, and *shared repertoire* are vital elements to engage members of the community in social interaction. Additionally,

activities within the scope of these three dimensions are important: collaboration, application, negotiation, facilitation, and active role (CANFA). Together, these three case studies are used to develop a model that organizations can use to foster knowledge sharing using social media and communities of practice. We begin with some background on our assembled theories in order to show how the use of social capital can solve the problem of connecting the knowledge in the minds of people.

Background

Framing Social Capital, Organizational Social Capital, and Communities of Practice

The theoretical model we propose leans heavily on the theories of social capital, organizational social capital and communities of practice as well as on research done on community application for knowledge sharing in an organizational setting. To align social media, social capital, and communities of practice, we need to examine the respective theories, examine linkages in the literature between communities and social capital, and review current applications to the field of technical communication. Below, we show the relation between the theories and explain how we incorporate our prior research as building blocks for a new model.

Social Capital. At the most fundamental level, social capital theory states that human relationships within a network yield certain benefits to the members of the network and the collective that would not be possible without the connections. Bourdieu (1985) was one of the first to give the term contemporary significance by describing social capital as, “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition” (p. 248). Existing literature on organizational social capital is quite clear in linking organizational efficiency and the ability to innovate directly to organizational social capital (Burt, 2005; Davenport & Prusak, 2001; Lesser & Prusak, 2004; Okoli & Oh, 2007; Tsai & Ghoshal, 1998). To date, the impact of participatory communication technologies on internal organizational social capital has received little attention, possibly, because of the less evident connection to measurable, economic value for the organization.

Organizational Social Capital. Nahapiet and Ghoshal (1998), in their seminal study, have related social capital to organizational advantages. Tsai and Ghoshal also reviewed the concept from the perspective of an organization, and building on Nahapiet and Ghoshal’s work, have described social capital as a productive resource that “encompasses many aspects of a social context, such as social ties, trusting relations, and value systems that facilitate actions of individuals located within that context” (Tsai & Ghoshal, 1998, p. 465). Okoli and Oh (2007) have described social capital as, “Institutionalized social relations with embedded resources’ which can benefit both the collective and the individuals in the collective” (p. 242). Highly relevant for our present model, Lin (2001) has stated that building ties that afford a range of beneficial outcomes requires investments, like real capital, such as time and nurturing similar to the creation of capital; in other words creating a specific environment where social capital can thrive. Lin, Cook, and Burt (2001) have argued that tying social capital to social networks accounts for both the individual and the structure the individual is part of, via ties to other individuals.

Organizational social capital is often defined in three dimensions of social context, the *structural*, the *relational*, and the *cognitive* dimensions. Nahapiet and Ghoshal (1998) view “social capital as the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit” (p. 243). Social capital, thus, “comprises both the network and the assets that may be mobilized through that network” (p. 243). Within this definition the *structural dimension* of social capital constitutes the presence of ties a person has and can use to his or her advantage in a social structure. Structural social capital is blind to the type or kind of connection; it merely acknowledges the pattern and density of the present ties. The *relational dimension* of social capital refers to the assets inherent in an individual’s relationships, such as trust and trustworthiness, norms, expectations, friendship, that have an impact on the behavior of individuals when communicating with each other. The third dimension of social capital describes the common understanding, shared code, or shared paradigm that enables a group to pursue collective goals. It is referred to as the *cognitive dimension*.

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Summarizing the main thought of Social Capital Theory, the performance of individuals, groups, and organizations in their respective socially or economically connected network is determined by social relations, norms, and values attached to social capital. Prusak and Cohen (2004) have defined social capital as the relationships that make organizations work effectively. Social capital aids knowledge development in organizations and investments in social capital by the organization “inherently serve to motivate organizational members to share knowledge” by way of membership in a community where “shared norms, trust, cognitions, and experiences stimulate goodwill and reciprocity” (Cohen & Prusak, 2001; Huysman & Wulf, 2004, p. 5). The model we propose frames the organizational investment strategy around the deliberate creation and nurturing of online communities, specifically communities of practice, maintained via social media technologies. Like social capital, communities of practice have widely accepted dimensions whose structure has been defined for a more complete understanding.

Communities of Practice. Community of Practice (CoP) is a term coined by Jean Lave and Etienne Wenger (1991) in their seminal book *Situated Learning: Legitimate Peripheral Participation*. Community of Practice theory is employed extensively for the analysis of groups; examination of situated learning experiences; exploration of virtual communities; and to explain organizational knowledge management. In his book *Communities of Practice: Learning, Meaning and Identity*, Wenger identifies three dimensions of a community of practice: First, it is a group that coheres through a “mutual engagement” that occurs within an “indigenous” or joint enterprise. These first two dimensions create a “shared repertoire” among the group participants (1998, p. 73). These three dimensions are critical to understanding successful collaboration and critical to achieving success in establishing a genuine community of practice. *Mutual engagement* means that people are engaging with one another to define and negotiate the terms of the collaboration. Many industry and academic projects refer to a sense of “buy-in” for projects. Mutual engagement takes buy-in beyond project acceptance to engagement with fellow team members. A *joint enterprise* results from engagement—people working toward a shared purpose and shared goals. This is

critical because a collection of people who share similar interests is not necessarily a community of practice unless the group collaborates toward a result or a goal. Finally, any community of practice must negotiate meaning, identity, and tools. This is what Wenger calls a *shared repertoire*, which is the language, conventions, and tools that are used for collaborative sharing in a community of practice (p. 82).

In his book Wenger also produces a table of 14 indicators that help to identify a community (1998, p. 125). These indicators include the presence of community behaviors such as sustained mutual relationships, shared ways of engaging in doing things together, and rapid flow of information. The combination of three dimensions with the 14 community indicators tightens the definition of community and better prepares the theory as a prescriptive tool to form effective communities of practice.

Community of Practice Theory as a Knowledge Management Tool

Iverson and McPhee (2008) studied the communicative processes within communities of practice and their research further elucidates the types and level of engagement exhibited by specific communities of practice. Expanding on Wenger’s three components—mutual engagement, shared repertoire, and negotiation of joint enterprise—the authors stated this about communities of practice theory:

Community of Practice theory strongly emphasizes the interactively constructed nature of engaging, sharing, and negotiating. The dynamic, processual focus on practice makes Community of Practice theory a situated framework for analyzing the dimensions of knowledge and knowledge relationships through the communicative acts of the three elements. Thus, Community of Practice theory offers a schema for analyzing knowledge as a process. (p. 179)

From 1991 to 2002, Wenger’s definition of communities of practice transitioned from a social theory of learning to a management theory which could foster collaborative innovation and knowledge exchange in organizations. The transition from communities of practice as a learning method to the use of these

communities as a prescriptive knowledge management tool is profound and pronounced, especially for Wenger himself. The transition shifts the focus from an ethnographic explanation to an applied tool which management can use to foster knowledge exchange. Consequently, the major shift for the theory has really been in its purpose: away from social learning and towards knowledge management. We complete our definition of communities of practice by exploring their use within organizations to exchange knowledge.

Communities of Practice for the Organizational Management

Hemre (2005) in a case study observing the implementation of knowledge management (KM) at Ericsson Research, Canada, has described the company's focus on the aspect of building and sustaining communities of practice. Ericsson Research decided to develop and promote knowledge sharing as a first step towards a knowledge management system (KMS). They investigated collaborative technologies, people networks, and social exchanges for knowledge sharing. Their vision was to make it "possible to innovate or solve problems using the available knowledge resources wherever present in the local or global organization" (p. 156). Ericsson expected to raise the level of innovation, to retain and leverage existing knowledge, to speed up product knowledge transfer, to identify and effectively deploy best practices, to speed up problem solving, to integrate new expertise, and to accelerate learning. After a failed attempt the company implemented facilitators and confidence in the usefulness grew to where virtual communities of practice were introduced.

Hemre (2005) has noted that the proactive implementation of Communities of Practice "requires attention to people relationships, social networks, business processes, organizational behavior, change management, and technology implementation" (p. 163). According to him one size does not fit all. Among the learned best practices for community-building are keeping it low-key, guiding and nurturing the process of networking carefully, and paying special attention to the role of community leader. Organizational change can often be disruptive and needs to be planned for carefully. In summary, Hemre (2005) has noted that this effort proved that tacit knowledge sharing is accomplished by social exchanges or the networking of people.

Sustaining Organizational Capital

Sustainable social capital has to be encouraged, nurtured, and fostered by an organization. It is organic and needs room to grow and adapt to meet the individual's needs. Prusak and Cohen (2004) have named two threats for social capital in today's organization. The first has to do with the volatility of the workplace and an emerging overreliance on virtuality. The threat of virtuality, however, has been contradicted by many researchers who found positive correlations between virtual connections and the creation of social capital (Chua, Madej, & Wellman, 2011; Ellison, Steinfield, & Lampe, 2007; Gruzd, Wellman, & Takhteyev, 2011; Quan-Haase & Wellman, 2004; Resnick, 2001; Wellman, 2001; Wellman & Gulia, 1999).

The second threat is that many managers do not know how to invest in social capital. They know that healthy relationships among individuals and groups in an organization are beneficial to the company, but they lack the understanding of actively making these relationships happen. Lin (2008, p. 12) has defined three essential prerequisites for an organization to reap the benefits of social capital: the presence of network embedded resources, the ability to access these resources by the individual, and the utilization of the resources for purpose-driven actions, such as problem solving and knowledge seeking. The model suggested here seeks to apply the theory of CoP to Baehr and Alex-Brown's (2010) and Alex-Brown's (2011) case study findings that social capital can be generated in a virtual environment. The CoP must be understood as a structured, deliberate building block to increase the formation of organizational social capital generated by connections formed between members (employees) via social media communication technologies.

Communities of Practice for Virtual Communities

There are several efforts to study community of practice theory in online communities. Van den Hooff (2008) extended the Technology Acceptance Model (TAM) developed by Davis and Bagozzi (1989) to build a theory that argued the use of ICT technologies to improve both the donation and collection of knowledge in the CoP common pool of knowledge. Similarly, Sharratt and Usoro (2003) built a model that connects the success of an online community and its knowledge exchange to the perceived ease of use and usefulness of

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the system itself. Hildreth, Kimble, and Wright (2000) studied the application of community of practice to virtual communities and examined whether the concepts from Wenger and Lave's Legitimate Peripheral Participation (LPP) model translate to the virtual world. Their studies of two international companies with community of practice members across the globe help to map the LPP concepts to the digital environment. Ultimately, technology through Information and Communication Technologies (ICT) is shown to be an integral part of current communities of practice.

Virtual Communities of Practice as Catalysts for Social Capital and Knowledge Sharing

The results of a study by Tsai and Ghoshal (2007) on the effects of social capital on resource exchange in an organization reveal that social capital is positively correlated with value creation. "Informal, social relations and tacit social arrangements encourage productive resource exchange." They have found a significant correlation between the structural dimension (social ties) and the relational dimension (trust). Under this light, the benefits of social capital for a company's ability to innovate, that is to create new knowledge that contributes to the enterprise's competitiveness, are obvious. Von Hippel (2005) has observed benefits of social capital in innovation communities of independent user-innovators. The user-innovators are independent users of certain products, who form innovation communities to find ways to combine and leverage their efforts, i.e. to share useful information and knowledge.

According to Coleman (1998a), social capital enables the transfer, preservation and creation of knowledge in an organization via communication among connected employees. It is crucial to recognize that knowledge is volatile just as the individuals, communities, or networks it originated in and can be lost for the organization when the knowledge holder leaves the company. Hackos (2001) has supported this notion by acknowledging "...that content doesn't become information and information doesn't turn into knowledge unless someone knows it's there, can get to it with minimal pain, and can repurpose it by creating new information from existing content" (p. 7). She also has stated that while tools and technology are needed, content management is not about tools. Rockley (2003) has called for the strategic, intelligent management

of knowledge by calling for a unified content strategy as a vital part of an organization's business strategy. The benefits of social capital for employees and the organization are in the efficient and timely flow and management of information and knowledge. Understanding the concept of organizational social capital in terms of knowledge sharing and social context helps inform the choice and implementation of communication tools and processes needed for a global workforce to operate efficiently. Our proposed model, as part of a unified content strategy, offers an organization a process and tangible management tool to deliberately guide and promote the formation of social capital for the benefit of the organization in terms of its ability to elicit the knowledge within people's heads for innovation or communication efficacy.

Community of Practice Theory in Technical Communication

The use of Community of Practice theory within the field of technical communication is sparse, especially research involving communities to build knowledge sharing communities. Some of the technical communication literature on communities of practice is written for the industry workplace or to address pedagogical aspects of technical communication education (Fisher & Bennion, 2005; Lappenbusch & Turns, 2005). Several studies forward the idea of CoPs for advancing the profession (Bernhardt, 2002; Kline & Barker, 2012; Wick, 2000). A few technical communication articles discuss collaboration and collaborative learning without mentioning the concept of communities of practice; most notably an article in *Technical Communication Quarterly* by Laura Gurak and Ann Duin entitled "The Impact of the Internet and Digital Technologies on Teaching and Research in Technical Communication" (2004). Much of this technical communication research for communities of practice involves communities solving specific technical communication problems rather than contributing to the strategic knowledge sharing of the organization. Our article covers new territory by proposing a model to position technical communicators in strategic roles that guide the implementation of social media and guide the formation of communities of practice to share knowledge across the organization.

Framing a Theoretical Model

To build our model we use three case studies informed by studies on content management from researchers such as Hackos and Rockley; the research on Communities of Practice by Etienne Wenger and the research on organizational social capital by researchers like Nahapiet and Ghoshal. The model was developed through analysis of the intersection and overlap of the outcomes of community and social capital on knowledge sharing activities. We begin with an explanation of the use of social media in building social capital at a large Fortune 500, global IT Solutions provider, Dell Inc.

Case Studies: Dell Inc.

The case studies conducted at Dell Inc. by co-author Alex-Brown examined how social media tools—the blog and the microblog used for internal communication—change the formation of organizational social capital. For a large, global organization such as Dell, the use of digital communication tools for internal communication has become vital to provide employees with relevant company news, organizational and business updates, and to conduct business in general. With the arrival of social media communication tools and their use for employee communication, employee engagement opportunities with each other and with management have increased. Two digital communication technologies in particular weigh heavily in the internal corporate communication landscape at Dell: the blog and the micro-blog. The internal, corporate blog is a centrally managed and moderated tool introduced and regulated by the leadership. The micro-blog is a tool without any centralized control or moderation and is based on employee participation.

The blog allows for audience participation in the form of posts, comments and dialogue between authors and readers and among readers; the micro-blog facilitates increased levels of real time communication, peer-to-peer and many-to-many communication as well as easy file and media exchange combined with an easy-to-use user interface. Both tools generate an archive of the information product, or body of knowledge, that allows employees and leaders to filter and search the content.

Case Study: TCBOK

The Technical Communication Body of Knowledge (TCBOK) project was formed in the spring of 2007

as one of five possible initiatives to improve relations between academic and industry practitioners within the discipline. Designed to be a ‘Wikipedia’ for the field of technical communication, the TCBOK project is sponsored by STC and volunteer members perform project activities. One expressed goal of the project was to bring together leading academics and practitioners in the field of technical communication to create a body of knowledge. This BOK project is not the first of its kind for a discipline. The Project Management Institute has codified the project management Body of Knowledge (PM-BOK). There is a Software Engineering Body of Knowledge (SWE-BOK), which was developed by the IEEE. Coppola (2010) stated that the project wanted to emulate the A/I efforts of ABET (formerly the Accreditation Board for Engineering and Technology) and also adapt an open, collaborative model such as the one used by the Usability Professionals Association.

Kline (2011) and Kline and Barker (2012) characterized the community formed by TCBOK volunteers from its initial phase in 2007 until 2010. The authors employ a modified case study to examine activities and engagement for TCBOK volunteers using Wenger’s CoP dimensions of *mutual engagement*, *joint enterprise*, and *shared repertoire*. Their studies specifically characterize the community of practice formed by volunteers through content review of documents and archived records, examination of physical artifacts, conduct of interviews, and observation, and surveys.

Agents of Change: The Blog and Micro-Blog as Change Agents in Social Capital

Two of the case studies this article builds on, “Assessing the Value of Corporate Blogs: A Social Capital Perspective” (Baehr & Alex-Brown, 2010) and *Blogging and Micro-Blogging Inside a Large, High-Tech Corporation: Impacts on the Formation of Organizational Social Capital* (Alex-Brown, 2011), conducted at global IT solution provider Dell Inc., found that social media communication technologies do in fact change the ways in which social structures are formed by facilitating the formation and maintenance of ties among employees.

Study results indicate that there is a difference between the tools regarding which of the three dimensions of organizational social capital gets affected most. For example, trends indicate that the blog, the way it is used at Dell, facilitates the growth of cognitive social capital and that the micro-blog offers unique

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opportunities to increase structural social capital by facilitating the creation of ties among employees to a higher degree than the blog.

Relevant for this study, Alex-Brown's (2011) content analysis of the information product of social communication technologies at Dell accounts for different usage models, such as event reporting, a daily non-topic related communication and specific topic discussions, reflect a varied relative distribution of the three dimensions of organizational social capital. The topic discussion usage model where participants discuss one particular technology topic, can serve a model for a communities of practice. Results clearly indicate the formation of all three dimensions of social capital (structural, relational, and cognitive) in this usage model.

Communities of Practice Require Active Engagement

One area of overlap for our model is the need for active social engagement in the formation, maintenance, and continuation of communities of practice. In TCBOk, when participants were socially engaged the outcomes for the community were significant and notable. When the engagement was low—as a result of solitary or non-collaborative activities—the effectiveness of knowledge sharing and contribution was diminished. Kline and Barker (2012) developed the CANFA model for application to community activities to ensure that social engagement is fostered, in their case between industry and academic practitioners. However, this model is not exclusive to the formation of ties between academic and industry communities. It can be applied to our expanded model for the development of communities to support increased social capital. To build social capital within communities there needs to be participant engagement. To increase engagement a community needs to increase (or encourage) engaging activities. These activities can be made engaging through the CANFA model: *collaboration, application, negotiation, facilitation, and active-practice*.

For the TCBOk project, the CANFA model worked like this. In the early phases of the TCBOk project the participants *collaborated* on taxonomies, definitions, scopes, and technological platform selection (among other things). Through *application* of the knowledge the community becomes more engaged. For example, as early participants worked through the development of personas with a consultant, their capability to apply this

information in both professional and academic settings led to discussion and engagement. *Negotiation* is critical for engaged CoPs. The TCBOk project team negotiated definitions, scope, IP policies, and the monetization of TCBOk content. Negotiation brought the community together to reconcile divergent opinions but ensure that each participant had a voice. For the TCBOk CoP to be successful, it needed *facilitation*. It did not require the same person to lead all activities, but a person leading each particular activity or phase. In the case of TCBOk, different facilitators rose to the occasion depending upon the expertise needed for each activity. Finally, the activities need to be active. Thinking, writing, revising, and affinity diagramming all led to successful outcomes for the TCBOk community. However, the progress of later phases was slowed down by non-active “input” which lacked engagement. Input was defined as content to a wiki, input sought for strategic plans, and input with action for volunteer assignments. This dearth of active engagement led to a disinterested community with low engagement and limited social capital ties and knowledge sharing.

The CANFA principles improve the efficacy for a general community of practice or for a specific CoP to develop an organization's body of knowledge. The clear relationship between engaged CoPs and the development of social capital led the current authors to propose a model which incorporates engaged CoPs to improve social capital. The remainder of the article discusses this model.

Building The SCOPOS (Social Media, CoPs, Organizational Social Capital) Model

At this point, we have reviewed how social media tools can generate social capital and have shown how Wenger's (1998) community of practice dimensions play a vital role in establishing an effective community. Additionally, we discussed the application of socially-engaged activities in a community of practice with the CANFA model. We now use these elements of social media communication and communities of practice to develop a model that technical communicators can apply to foster knowledge sharing and form social capital in an organization. We assume that the goal of knowledge sharing, community, and social capital is innovation. Goals other than innovation are certainly

possible at the highest level of the model. Whatever goals an organization has for connecting to social capital, communities, and knowledge exchange can be adapted to this structured model.

The primary objective of the model is to structure a process or processes that organizations can use to increase knowledge sharing, thus leading to a goal of increased innovation. Early in the article, we describe the survey and focus group study that Kline conducted which shows that over 50 percent of companies do not have a clear process for innovation communication. The model can be implemented to provide direction and structure for internal social media efforts. A second outcome of the model is that the levels (floors) each provide an opportunity for technical communicators to become involved with the process of knowledge sharing. First, when these social media channels are internally focused, they provide excellent opportunity for technical communicators to assist in development when contrasted to external corporate social media, which is typically controlled by marketing or PR departments. Next, the process involves the development of communities, which often have no clear functional department within many organizations. Technical communicators can make an argument for some control of communities because of the domain areas involved: technical information shared by communities, the UX connection, and the content platforms that control the community interaction (e.g. blogs or wikis). Finally, the role of developing and structuring knowledge sharing and innovation communication moves the technical communicator from a tactical role to a strategic role in the organization.

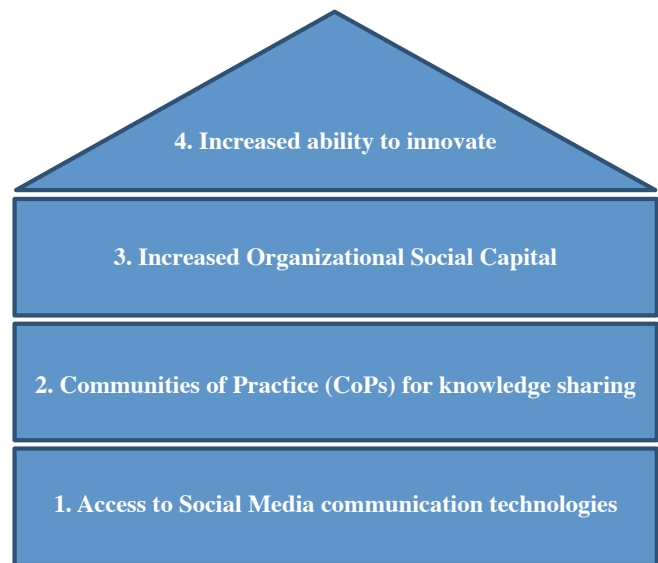
This last outcome is a passion for many technical communicators and for the authors who are both blended academics and practitioners. If technical communication is to obtain a seat at the executive table it will require a strategic focus with an opportunity to change the organization. Fostering increased innovation through knowledge sharing and communication would certainly accomplish this for a technical communicator.

Explanation of the Model

Figure 1 shows the four levels of the SCOPOS model using a house metaphor. The ground floor (alternatively the foundation) is the use of social media technologies within an organization. The second floor is the formation of communities of practice.

These communities provide structure for employee engagement and communication and foster knowledge sharing in specific areas. The result of socially-mediated communities of practice is increased social capital. When facilitated, this increased social capital drives greater innovation through increased sharing of knowledge and establishment of clear communication processes.

Figure 1. SCOPOS Levels to Achieve Increased Innovation



The first level of the model is simply the access and integration of social media technologies. In coining the term Enterprise 2.0, Andrew McAfee (2006) describes the use of emergent social software platforms in organizations. One element to the emergent nature of McAfee's definition is the freeform nature of the tools as well as the free or low-cost access. Our Dell case studies illustrate the value, however, of a systematic approach to the adoption of emergent social software. While strategies for access and implementation are outside of the research scope of this article, users need to ensure that valuable emergent media are accessible and provide useful connection to others for knowledge sharing in the organization. Once this is accomplished, the social media tools can be used to foster communities of practice.

The second floor (level) of our model is the development of communities of practice. Kline's research on communities of practice and his characterization of the STC Body of Knowledge project (2012) inform the development of effective CoPs. More importantly, the formation of CoPs provides a purpose for emergent

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social media and underpins the development of a comprehensive knowledge sharing platform. Saint-Onge and Wallace (2012) note that there have been significant studies regarding the use of CoPs as a knowledge management tool. Wenger's (1998) early development of three dimensions for Communities in *Learning, Meaning, and Identity*—including mutual engagement, shared repertoire, and joint enterprise—provides direction for the formation of communities that accomplish knowledge sharing. Kline and Barker (2012) characterize additional factors (CANFA) that are described in the Application section below. The focus of emergent social media on forming communities of practice increases the engagement between employees and begins to form the connections that result in social capital.

The third floor of our model is social capital. The engagement of employees in communities of practice using emergent social media subsequently forms ties that result in sharing knowledge that was impossible without social connections. The three dimensions of social capital—structural, relational, and cognitive—facilitate the flow of information among members of organizational communities of practice. It is difficult to

quantify the knowledge sharing that occurs when people expand their networks to include people who would not have been in their networks in more traditional knowledge sharing structures such as expert databases and best practice case studies.

Application of the Model

This section provides guidelines for developing a structured model that builds CoPs from social media tools to improve social capital ties. We cull this information from our case study research, pilot research on innovation, and our characterization of the intersection of communities of practice and social capital activities.

Emergent Social Media. As this paper has previously stated, it is imperative to provide employees with access and suitable integration of emergent social media platforms. Kline's pilot research study on innovation communication discovered that a majority of employees at each level of management (staff, management, executive) consider e-mail to be a suitable platform for innovation communication. Unfortunately, e-mail has severe limitations in its ability

Table 1. Successful Community of Practice Elements

Wenger's dimensions of community	Mutual engagement—Shared repertoire—Joint enterprise
Kline and Barker's list of community activity factors (CANFA)	Collaboration—Application—Negotiation—Facilitation—Active Role
Wenger's indicators of community	<ol style="list-style-type: none"> 1. Sustained mutual relationships—harmonious or conflictual. 2. Shared ways of engaging in doing things together. 3. The rapid flow of information and propagation of innovation. 4. Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process. 5. Very quick setup of a problem to be discussed. 6. Substantial overlap in participants' descriptions of who belongs. 7. Knowing what others know, what they can do, and how they can contribute to an enterprise. 8. Mutually defining identities. 9. The ability to assess the appropriateness of actions and products. 10. Specific tools, representations, and other artifacts. 11. Local lore, shared stories, inside jokes, knowing laughter. 12. Jargon and shortcuts to communication as well as the ease of producing new ones. 13. Certain styles recognized as displaying membership. 14. A shared discourse reflecting a certain perspective on the world.

to form communities or develop lasting social capital connections. We suspect that the ubiquity of e-mail plus its integration within our workflow have blinded many employees and managers to e-mail limitations. Consequently, an emergent social media platform that allows collaboration, communication, and connections, should be implemented across the breadth of employees in the proposed community. For example, at Dell a blogging and a micro-blogging tool plus wikis are used for employee communication and social engagement.

Guidelines for Emergent Social Media Implementation:

- Ensure access to social media platforms for all people in the proposed community
- Integrate the platform into the workflow for employees involved in the community
- Seed either content or connections through the identification of social technology champions or dedicated community managers
- Recognize that participation and employee incentives are more important than the specific
- Ensure the implemented software and tools support remote connections and mobile connectivity

Formation of Communities of Practice. Use social media to form communities of practice. Communities of practice focus the scope and activities of emergent social media. They provide an effective pathway to knowledge sharing. Wenger's dimensions of *mutual engagement*, *shared repertoire*, and *joint enterprise* can help to guide the structure and activities in the community. Table 1 shows the three dimensions of a community; the 14 indicators that community is present; and the factors that can make community activities more effective. Some of the indicators are prescriptive, so they can be developed into the structure or activities of the community. Kline and Barker's STC Body of Knowledge case study research (2012) goes beyond Wenger's dimensions and factors to prescribe activities that engage community participants. The CANFA model prescribes that activities need to be *collaborative* between participants; *apply* to the work they are performing; *negotiate* the outcomes and products of the community; structure *facilitation* into the community, and focus on *active-role* participation at the workplace. Below are some additional guidelines for CoP development.

- Homogenous communities where employees have the same technical knowledge are the easiest to start
- It is important to understand the differences between top-down and bottom-up development of CoPs
- Identify outcomes and expectations just as you would for other teams or projects.
- Employees need to engage for a community to succeed—distributing documents, sending FYI memos, or creating extra make-work projects will kill community formation.
- Communities of interest, which form around non-work topic (e.g. personal interests) can still be effective in the formation of social capital.

Increasing the Value of Social Capital

Connections. Implementing social media and forming communities of practice will increase the value of the connections within the organization. The authors noticed the overlap in the indicators of community and the development of social capital as our comparison of research on bodies of knowledge progressed. The intersection of community formation and social media outcomes translates into formation of deep and lasting social connections. Ultimately, the formation of knowledge communities will help to develop the organization's body of knowledge as well as connect people to the knowledge in the minds of other employees. Engaged activities in the communities help to increase the value of social capital connections by strengthening the social capital ties between employees. Below are guidelines to increase the strength of these social capital connections through engagement:

- Negotiating results in shared and accepted ways of doing things—this builds relational social capital.
- Sustain the community—long-term mutual relationships builds structural social capital.
- Diverse communities build relational social capital—they are harder to start and maintain than homogenous communities, but establish trust between functionally different employees.
- Encourage shared discourse, stories, humor, and even jargon—these build cognitive social capital as employees share.

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The value of communities of practice and their contribution to social capital is not new. However, our research shows the use of social media to develop the communities and the use of socially-engaged activities will increase the value of the social capital that forms from knowledge communities. We conclude with a short discussion and thoughts about future research.

Conclusion

Social capital theory, at the very basic level, assigns value to the social connections that people have with one another. Organizational social capital can be summed up as the benefits resulting from the ties employees form with other employees in the social structure of an organization, often independently of organizational structures. These benefits can be seen at the individual level and at the organizational level. The presence of a connection stimulates interaction, the asset inherent in the connection determines the depth of the interaction and the common paradigm among connected employees enables the common pursuit of goals. Relevant for the proposed model, social capital literature links high levels of social capital to a firm's increased ability to innovate based on improved communication among employees.

Organizational knowledge management systems, in essence, are designed to improve the knowledge flow inside of an organization to improve efficiencies of work streams and to increase the organization's ability to be innovative in an economy where knowledge is an important differentiator in a highly competitive market place. KM literature indicates a trend of moving away from technology centric, rigid information repositories agnostic of the social context they are to operate in towards people centric systems that are designed to naturally fit in the employees' work streams and social context. The SCOPOS model builds current trends of social media engagement (Enterprise 2.0) and the sharing of knowledge in communities. It provides a structure for achieving increased social capital in workplaces that are moving away from structured and hierarchical technological systems and management styles.

The proposed model could be applied at an organization like Dell by formalizing an existing loosely-organized community of engineers around a topic such as software-defined networks (SDNW).

The community builds social capital by instituting a community leader who proactively facilitates community member interaction, identifies new members based on their knowledge, states specific outcome expectations (for example, identify a set of customer challenges where SDNW is a viable solution), periodically summarizes progress and by setting up a cadence of synchronous, online chat sessions in addition to the asynchronous communication.

Long-term research needs to test the proposed model in an organizational setting. Content analysis of the information product of a social media-facilitated CoP combined with participant interviews might provide strong insight into the viability of SCOPOS model.

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Developing a Sustainable Content Strategy for a Technical Communication Body of Knowledge

Craig Baehr

Abstract

Purpose: To explore strategies, goals, and practices that are part of a sustainable content strategy for the evolution and development of the technical communication body of knowledge and, by implication, other bodies of knowledge.

Method: To develop a sustainable content strategy for the body of knowledge project, informed by content analysis, user generated survey data, and benchmarked trends from other knowledge bases.

Results: An important part of content strategy for a large-scale knowledge base, such as the TCBOOK, involves innovating practices with regard to the information taxonomy, tools, content assets, and information development standards, as the product and user base matures. Successful technical communication knowledge bases employ taxonomies with higher level topics that represent specific disciplines and sub-disciplines within technical communication. Integrating the human user into content strategy involves a complex interplay of user expectation and feasible decision making.

Conclusions: Developing a body of knowledge, particularly over time, may require an integrated or hybrid approach to content strategy, involving a complex set of factors that include the human user, content assets, and sustainable practices. Content strategy goals and objectives are also a function of the maturity of the user base and the content itself within a body of knowledge.

Keywords: content strategy, body of knowledge, information taxonomies and tools, content management, user engagement, knowledge base

Practitioner's Takeaway

- Effective content strategy is iterative and evolving; over time it is sustainable, and closely linked to both standards and practices that define a body of knowledge.
- A significant success factor in any mature knowledge base includes maintaining both a vetted taxonomy and tools that emphasize content findability.
- User preferences cannot always be mapped directly onto an existing information taxonomy or its tools, but they are essential for a sustainable content strategy.

Content Strategy for a TC Body of Knowledge

Introduction

A body of knowledge defines the scope and reach of foundational knowledge, trends, and expertise areas within a particular field. Certification, licensure, industries, jobs, professional organizations, conferences, and others all have an influencing factor on how a field defines its boundaries and knowledge domains. The interdisciplinary nature of what technical communicators produce, develop, design, manage, research, and the tools, collaboration models, and standards make particularly complex the task of developing a tangible knowledge base to capture the field's body of knowledge. While many fields have their own body of knowledge, "the challenge of ours is that it is dispersed: in our own publications such as *Technical Communication* and *Intercom*, in many important books, in the academic programs that we teach, and as our profession is so interdisciplinary, across other professional organizations in our field and the many closely related fields" (Technical Communication Body of Knowledge). This article explores how bodies of knowledge are defined, codified, sustained, and matured. Specifically, it examines the case of the Technical Communication Body of Knowledge, the evolution of its content strategy, and how that strategy is closely linked to both standards and practices that define the field.

What Is a Body of Knowledge?

A body of knowledge represents breadth and depth of knowledge in the field, with overarching connections to other disciplines and industry-wide practices. Within the field of technical communication, some examples of knowledge bases that attempt to capture a body of knowledge include the E-Server Technical Communication Library, a searchable database of publications, and the Technical Communication Body of Knowledge (TCBOK) project, a collaborative wiki on a wide range of topics in technical communication. Smaller knowledge bases exist that focus on a single topic, format, organization, or function, with depth on a particular topic. Universities such as Purdue University's Online Writing Laboratory and the University of Alabama at Huntsville's Technical Communication Online Resources offer information resources on specific topics such as writing assistance and online resources. Professional organizations in the field also have Web presences and publication clearinghouses that represent

specific topics, groups, interests, and research priorities of the field. Some of these include the IEEE Professional Communication Society, Council for Programs in Technical and Scientific Communication (CPTSC), the Association of Teachers of Technical Writing (ATTW), and the Society for Technical Communication (STC). Corporate and government workplaces have knowledge bases that contain best practices, procedures, technical manuals, and white papers that contribute to the advancement of knowledge in the profession, both locally and globally. These smaller collections, while they have more depth than breadth, have an undisputed influence on how the field defines the boundary and content of its body of knowledge. Developing a sustainable content strategy for the evolution and development of the codified product is essential to ensure it adequately represents the corpus of knowledge and its constituents.

How Do Bodies of Knowledge Evolve?

Two dominant, perhaps philosophical, approaches that characterize how tacit knowledge evolves into a more concrete product are folksonomy, a user-driven approach, and a taxonomy, or content-driven approach. Governor, et. al., (2009) articulates this divide as tagging (folksonomy) vs. directories (taxonomy). These approaches underscore two important aspects of the knowledge base: the user and the content. The folksonomy approach is characterized by a dominance of user preference and consensus as the guiding mental model for developing a list of topics in a knowledge base. Smith (2008) defines it as a bottom-up classification strategy that emerges from user-generated content and preferences, including content tagging. Content tagging allows users to "create their own classifications" adding descriptive keywords (or tags) to their contributions and creating links to other content (Governor et. al, 2009, p. 58). Some challenges to this approach include inconsistent uses of terminology, metadata, and editing, among a user base, which can create usability and findability problems. And, while it has a strong user-centered component as an underpinning, this approach tends to rely on social construction of knowledge over and specific information design theory, information taxonomy, or trends in the content inventory.

The taxonomy approach relies on the content assets, and in some cases, a small group of subject

matter experts, to drive decisions made in organizing material into topics. These decisions might be based on a number of factors including existing content patterns, metadata, content volume, trackbacks, links, and other factors. Adaptive content, which adjusts, filters, and displays content within a content management system, can also create unforeseen challenges for users (Rockley & Cooper, 2012). Within adaptive content systems, information taxonomies might be auto-generated by the system, which can create potential usability problems if users fail to comprehend the taxonomy or navigation structure. A taxonomy approach also differs from the folksonomy in that it may not incorporate specific user preferences in organizing content. This approach might have a tendency to favor the content product itself over users, which might impede usability and accessibility.

Value propositions and a body of knowledge are closely linked in scope and reach. While the former outlines the idealized value of work the field is capable of producing, the latter has the responsibility of communicating domain-specific knowledge in the various specializations, products, and skills to its constituents (practicing technical communicators and those who work with them). The value proposition for technical communication has gone through an iterative process of development, and the current version states:

Technical communicators clarify the complex for a wide variety of organizations, fields, and industries. Through expert development, management, and dissemination of information, technical communicators help increase corporate revenue, customer satisfaction, and public safety, while reducing product development time, technical support, and other direct and indirect costs. Using a wide variety of technologies, tools, and processes, technical communicators deliver a positive user experience and the right information to people, when they need it and how they need it. (Technical Communication Body of Knowledge)

These statements might drive a content-driven approach by helping define the breadth and boundaries of knowledge within the field, and can be extended to the field's body of knowledge. They are also often written by a small group of experts in a particular field or discipline, acting as a guiding principle that informs the overall content strategy.

Content Strategy and Bodies of Knowledge

As part of an effective content strategy, it is important to determine what factors will influence and drive the organization of content, information taxonomies, and tools users will need to effectively contribute and access content within a body of knowledge. Content strategy draws from several related disciplines and their practices, including knowledge management, content modeling and user experience. The process includes analyzing users, content, organizational needs, processes and technology to develop a strategy that is sustainable and standardized (Rockley & Cooper, 2012). Knowledge management involves a systematic approach to capturing, organizing, maintaining, and delivering information throughout an organization, both tacit and explicit (Dalkir, 2011). Content management is the “process of managing electronic content through its lifecycle—from creation, review, storage and dissemination to destruction” (Parapadakis, as cited in Clark, 2008, p. 38). Rockley and Cooper (2012) further describe it as “a repeatable method of identifying all content requirements up front, creating consistently structured content for reuse, managing that content in a definitive source, and assembling content on demand to meet customer needs” (loc. 467).

An important part of an ongoing content strategy is content modeling, or defining (and maintaining) the structure and granularity for the content assets contained within an information product, such as a knowledge base. Content assets include all types of content in a given information product or database, such as topics, articles, chunks, and multimedia. Content modeling involves a hierarchical or topical ordering of content components into a coherent organizational structure (Rockley & Cooper, 2012). Hackos (2007) uses the term topic architectures in place of content models, which involves a categorizing content from general to specific in a hierarchical structure, which might resemble a file folder structure. Within such a structure or model, hypertextual (or intertextual) links are also possible and necessary for cross-referencing and more flexible navigation within digital publications, including wikis and other content management systems. Intelligent content design involves tagging, structuring, designing, and preparing content for discovery and reuse, and ensuring searchable, tagged, predictable, or structurally rich (Rockley & Cooper, 2012). Intelligent content is structurally rich and semantically categorized, making

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it discoverable (findable), reusable, reconfigurable (modular), and adaptable (Rockley & Cooper, 2012). Content models also define the information architecture of the information product and serve as micro units of interconnecting content sections that inform the contextual navigation for the product (Rosenfeld & Morville, 2007). Subsequently, content models can be used to create authoring templates, structured authoring guidelines, stylesheets, and so forth. They guide authors in content creation, facilitating reuse of content, and also support adaptive content (Rockley & Cooper, 2012). The ability to share knowledge, reuse it and to innovate the ways in which both are achieved can be essential to effective content management (Dalkir, 2011).

A significant success factor of content strategy and knowledge management for electronic distribution and delivery, is technology. This involves choosing the right platform and tools. Most content management systems (CMS), incorporate “markup, metadata, and tools to break documents into component parts, to a level of granularity...set by organizationally defined information models, and labeling each part with metadata that describe its meaning and relationships to other content” (Clark, 2008, p. 39). One advantage of such an automated or adaptive content model is scalability, where the system accommodates new content by growing the structure. Automated indices, navigation tools, content editors, information templates, and stock design elements are also often components that can be integrated from content libraries within the system. Some disadvantages include a lack of customization options or usability problems from automatically generated information structures or navigation tools, which are inconsistent or uninformed by user’s mental models or expectations. These systems often require system level knowledge, such as advanced scripting and programming languages to make highly customized changes to account for these limitations. Technological systems are also not yet complex enough to personalize and customize the user experience in every possible context, emphasizing the importance of the human user in the process (Morville, 2005).

Integrating the Human User

Dalkir (2011) also stresses the importance of the human component in knowledge management practices, which is applicable to content strategy for a body of knowledge. The practical side of developing information

taxonomies and navigation tools involves user experience and other human factors. Information taxonomies must be understood by users for them to be viable information tools and helping users comprehend the structure and presentation of information. Morville (2005) stresses the importance of findability, or “the degree to which a system or environment supports navigation and retrieval,” in electronic information systems (p. 4). Findability is inherently a human factors problem, focusing on making content widely and easily accessible to users of electronic systems.

User experience design (UX) integrates three essential tasks in content strategy and information development, which to be successful, focuses on the user. These tasks include information architecture, interaction design, and user research (Unger & Chandler, 2009). This translates to an iterative process of developing site maps (overall site structure), task flows (procedural or process-oriented activity paths), annotated wireframes (interface layouts), and prototyping (working models) to design and optimize interactive experiences (Unger & Chandler, 2009).

An extension of user experience is considering how to involve users integrally as part of content strategy. Community engagement is a strategy for fostering a sense of shared or “joint enterprise” and creating opportunities for engagement, activity, and productivity (Kline & Barker, 2012). Some of the ways in which information products can successfully achieve this is through activity-based collaboration, including persona development, use of Web 2.0 social media tools (such as a LinkedIn group), and taxonomy building activities. Challenges include a lack of engagement in content writing and disputes over intellectual property and content ownership issues (Kline & Barker, 2012).

Users construct a cognitive whole or mental model of these elements based on their comprehension of content models, site maps, indices, navigation tools, and headers. Garrett (2010) conceptualizes user experience as a layer of both concrete and abstract elements, including visual design, interaction, navigation, information architecture, and rhetorical concerns, working together to create the interactive product. Effective content strategy and content modeling is a user-driven process, focusing on making choices in structure and navigation that are feasible within the constraints of the content assets and user expectation. Clark (2008) argues that effective content management involves a meaningful integration of presentation and content for the user,

although in development these two activities may occur in isolation. Within content management systems, navigation tools (lists, menus, site maps, taxonomies) help connect what users see (visual presentation) and what they read (content). These tools have the potential to communicate structure, content relationships, context (location), and conceptual information about the material being accessed. Although users have different task and information priorities, the user population shares common mental patterns, attributes and expectations informed by basic psychological processes (Raskin, 2000). One approach that accommodates these psychological processes is visual thinking, which considers perceptual and cognitive acts users actively engage when conceptualizing the meaning of content in their visual field. Since electronic environments emphasize the visual and spatial presentation of content, this approach can be particularly useful in determining user expectations.

While this and other applied approaches can be informative in basic processes of how users think, perceive, and interpret visual content, it's important to also study users in a working context since user habits and behaviors may sometimes override these instinctive behaviors, but not initially, and not without prior conditioning or experience. For example, from a content strategy perspective, developing tools and taxonomies that build on previous experiences, suggest function, and are tested, can help users solve information problems within knowledge bases. Also helpful is developing navigation tools that suggest meaning, function, structure and that incorporate familiar iconography, text-image pairing, visual conventions, consistency, and contrast. Finally, using a range of tools that corresponds to the range of user needs and content is important (Baehr, 2007).

A Body of Knowledge for Technical Communication

Started in 2007, the Technical Communication Body of Knowledge (TCBOK) is an evolving knowledge base that covers a wide range of topics in technical communication. The TCBOK exists on a wiki platform moderated by a managing editor and technical manager, with its own internal documentation policies for content writing, editing and reviewing. The document types it contains include topic introduction

pages, supporting content pages, reference pages, and annotated bibliography pages. Additional content assets include an alphabetical page index, glossary, dictionary, bibliography, and portal map. The navigation tools include a hierarchical navigation menu, keyword search, personas, and alphabetical topic index.

From 2007 to 2009, the initial phases of the project included developing a framework, refining the framework, and developing strategic governance (Coppola, 2010). In 2009, the TCBOK became an online presence in the form of a collaborative wiki and since the two years that followed this initial and important groundwork, the TCBOK has functioned in a production phase, with periods of high and low activity, as users contributed content to the growing knowledge base.

The initial guiding metaphor of the TCBOK has been the user persona, or more specifically the unique range of users and their information needs (Coppola, 2010). Throughout its history, the development and restructuring of the framework has been informed by user feedback, through surveys, interactive mind-mapping (card sorts, “walk the wall” event), conference focus groups, and user feedback. With its history, the project has been vetted, organized, commented on, and informed by a wide range of academics, professionals, and subject matter experts representing a breadth of user experience.

As a large-scale collaborative authoring project, the body of knowledge project enlists academic and workplace practitioners in an ongoing dialog of what knowledge defines the boundaries of the field. Ideally, a body of knowledge, such as the TCBOK, is designed based on best practices and trends from other knowledge portal paradigms and frameworks from other professions with close ties to technical communication (Coppola, 2010). Two challenges that have been ongoing throughout the lifecycle of the project have involved semantics (naming) and structuring (content organization). Kline and Barker (2012) attribute these challenges to differences in discourse styles, employment structures, and collaboration structures, among others, common to academic and industry partnerships. The ongoing development of such a project is sustained largely by online, virtual collaboration, face to face meetings, workshops and the other related activities previously mentioned. And, a body of knowledge evolves with changes in the global workplace, technology, and other factors.

Content Strategy for a TC Body of Knowledge

Current Content Strategy Goals

In summer of 2012, a new team of facilitators began developing a content strategy for the TCBOOK based on current research and best practices in the field. Three important elements of the content strategy involve the users and their experience, the content itself, and the facilitators who currently oversee the project. As the project has matured, the user base has widened in expertise and size, the content has grown in volume, and the experts who oversee the project have transitioned on and off the project. From September 2012 to August 2013, the TCBOOK has had more than 67,000 visits, 255,000 pages accessed, and a total of 465,272 hits (TCBOOK). To date, there are more than 600 authored content topics and 100 contributing authors (Technical Communication Body of Knowledge).

As users have contributed more content in recent years, the taxonomy has expanded beyond its initial structural model. A significant part of the content strategy for the body of knowledge also involves user expectations and benchmarked trends in the field. Collectively, these elements become specific goals to help the project continue to be sustainable and grow as a body of knowledge and valuable resource. As part of the content strategy, the facilitators are using a hybrid folksonomy and content-driven approach that considers both human factors (user preferences, mental models) and content factors (existing content assets and information taxonomy). Also, the project has a long history of user engagement and a significant content volume, which suggested the hybrid approach. The specific content strategy goals for this approach included the following:

- Analyze and evaluate existing content assets to see what trends (and problems) might suggest and improve findability and social engagement opportunities
- Gain an understanding of the mental models of users and how they comprehend the information taxonomy of a body of knowledge
- Synthesize findings in a discussion-based format with the facilitators' team to determine production tasks including revision to content, information taxonomies, navigation tools, and publication standards

As part of the re-formulated content strategy, these objectives and their corresponding tasks were assigned to one of three teams: content restructuring, social engagement and publication standards. As the volume and users for such a large-scale project grow, the information taxonomy complexity increases, affording opportunities to consider different approaches to searching and browsing, engaging users, and publication standards. An initial task was to develop prototype subject or topic based indices that would broaden the tools available to users, accommodating both seasoned expert and novice technical communicator. Other tasks considered were a tagging strategy for content and making adjustments to the information taxonomy and site navigation menus towards the goal of improved findability.

Evaluating Existing Content Assets and Models

The first content strategy goal was to analyze and evaluate existing content assets to see what trends (and problems) might suggest improved findability and social engagement opportunities. This involved two important tasks, the first being a comprehensive review of the information taxonomy, including the alphabetic index and information model map. The second task was to examine data collected from other knowledge portals, including topic lists, navigation tools, and patterns. Collectively, these data potentially reflect patterns and problems that may suggest ways to improve a body of knowledge.

One important distinction to make while reviewing the inventory was separating domain knowledge topics, such as information design, from meta-content, such

Figure 1. Selection from the TCBOOK Alphabetical Content Index

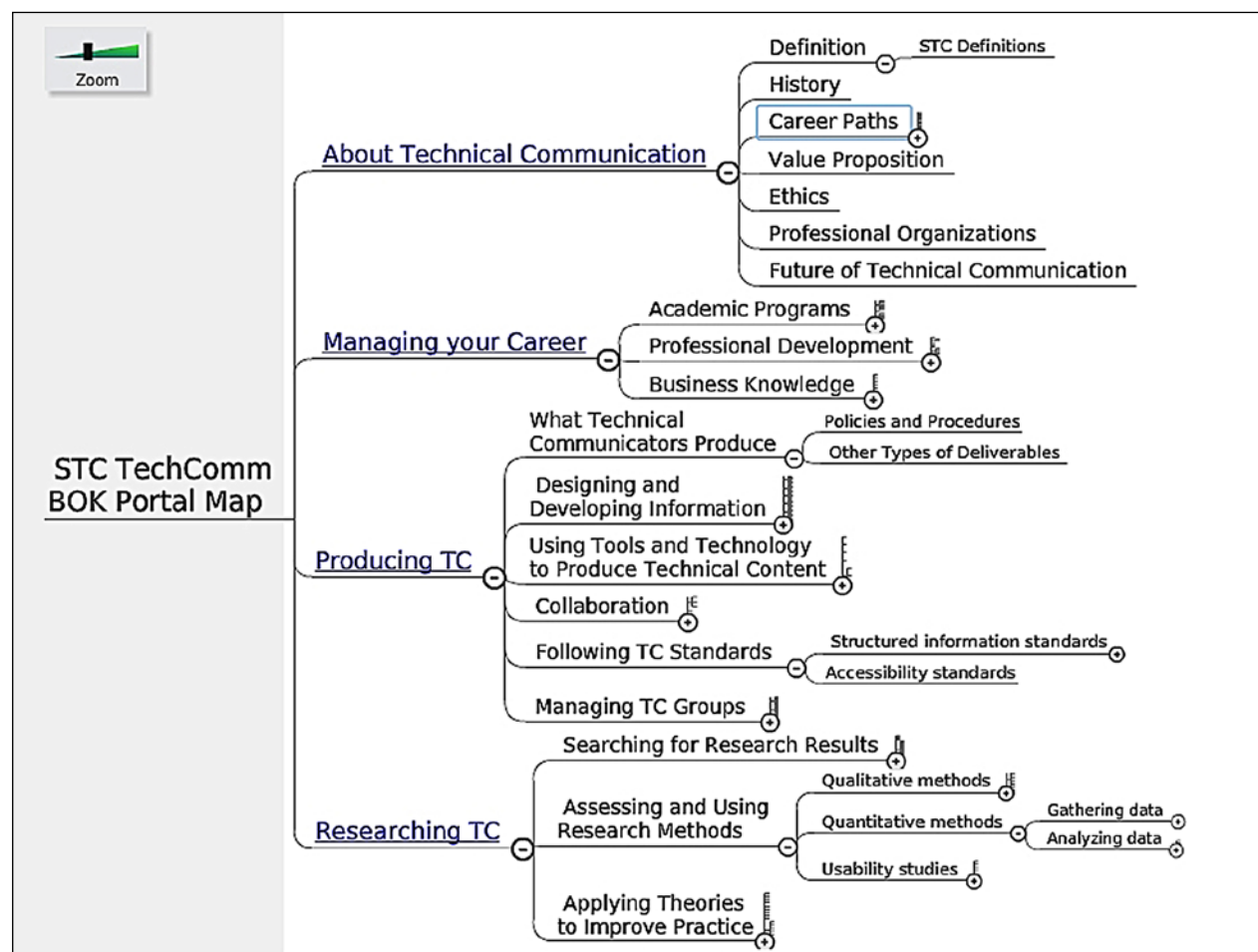
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AAS
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Accessibility
Accessibility Issues
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Acquisition Plan Template
Acquisitions Editor
Activity Theory

as user comments, historical timelines, and procedural documentation for the TCBOOK project itself. Domain knowledge content includes a wide range of topic entries on everything from information development, project management, usability testing, and instructional design, to structured authoring, and professional organizations. The topics represent trends in research, publications, conference topics, courses, and professional development topics. The meta-content includes content about the body of knowledge project, its history, background, development, and user comments. This content provides more contextual information and background on the project as do discussion points raised on individual domain knowledge topics. Both individuals and groups have contributed to content in the TCBOOK, from the academic and industry sectors. Several tools were available to search and browse content, including an alphabetical index, information model map, and multi-level hierarchical navigation menus.

The alphabetic index of content topics is an auto-generated list that also provides direct links to each content topic by its individual title. The index includes individually titled pages that contain domain content, meta-content, node pages, and other content (see Figure 1).

The titles of some topics, which varied in style based on individual contributor, created some obvious indexing problems. For example, “A Guide to Proposal Writing for Technical Communicators” was previously listed under A, whereas a more keyword and index friendly title might be “Proposal Writing Guidelines.” As a navigation tool, the index was useful in finding information, particularly when the keyword search was less helpful. For example, when looking for “science writing” using the search tool, the desired page fails to appear on the first full page of results, but looking for the same keywords under the alphabetic index was more helpful.

Figure 2. Information Model Map of the Technical Communication Body of Knowledge (TCBOOK)



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The information model map, generated from comapping.com, provided a hierarchical list of topics from general to specific. The top level of the taxonomy includes four major categories: about technical communication, careers, producing technical communication, and research (see Figure 2).

While the existing structure was favored by users in the survey and preferred, one of its unfortunate limitations is the inability for users to easily access these topic pages in higher levels of the information structure. For example, more specific domain knowledge topics were found in levels 3-5, such as information design, usability, and technical editing. From the second level category “designing and developing information”, the corresponding third level topics include: information management, information design, information development, information delivery, quality assurance, translation, localization, globalization, and e-commerce. Within the third level topic “information design” heading, the fourth level topics include: design theory, needs assessment, information architecture, accessibility, content strategy, visual design, instructional design and information mapping. These topics at the third, fourth and fifth levels were more frequently represented in other information taxonomies studied.

Looking at other technical communication knowledge portals was helpful in identifying trends and

differences in information modeling, when compared to the TCBOOK. The sample models examined included the Certified Professional Technical Communicator (CPTC) certification domain areas, E-Server Technical Communication library, Wikipedia listing of technical communication job titles, STC list of Special Interest Groups (SIG), and the 2012 STC Summit program progression topics, as shown in Table 1. The goal was to examine the top-level information taxonomies from a range of knowledge portals, while keeping the sample small, manageable, and representative of higher level trends in information organizing patterns. The range of samples includes publication portals, conference tracks, certification models, and disciplinary emphasis groups within technical communication. Although several models were STC information resources, the samples had too much variability in the organization and topics of the information taxonomies to be useful as a model for the TCBOOK.

The models in Table 1, which are examples of successful technical communication information models, tend to have taxonomies with higher level topics that are reflective of specific disciplines and sub-disciplines within technical communication, such as information design, user experience, technical editing, content management, and so forth. While there were overlapping topics in these models, there was

Table 1. Information Taxonomy Categories from Different Technical Communication Knowledge Portals, Topic Lists, and Domains

CPTC Certification	User, task, experience analysis; information design; process management; information development; information production
E-Server Technical Communication Library	Information design, multimedia, organizations, software, usability, Web design, workplace, writing
Wikipedia Technical Communicator Jobs	Technical writer, technical editor, technical illustrator, information architect, usability expert, user interface designer, user experience designer, technical trainer, technical translator, API writer
STC Special Interest Groups	Academic, accessibility, Canadian issues, consulting and independent contracting, content strategy, emerging technologies, environmental safety and health communication, Europe, illustrators and visual designers, information design and architecture, instructional design and learning, international technical communication, lone writer, management, marketing communication, online, policies and procedures, quality and process improvement, scientific communication, single sourcing, technical editing, usability and user experience
STC Summit Program Progressions, 2012	Contracting and consulting; education; management; professional development; usability, user experience and accessibility; writing and editing

still a significant breadth suggesting there is no ideal, perfect, or complete model in existence. Some of the suggested topics from the survey, such as marketing communication and science communication, were present in these models. Examining these models also reveals a broader range, which might suggest the potential reach of a body of knowledge, one which the current TCBOK has not yet achieved in scope. In turn, these representative models might suggest how the body

of knowledge might expand to incorporate new topics that best represent the breadth and depth of the field.

Understanding User Expectations

For the facilitation team, incorporating the human user into the content strategy was essential not only from a user experience perspective, but also to create a more integral role for users. Toward this content strategy goal, a survey was developed to determine user-specific

Table 2. User Rankings of Content Topics in an Information Model

Topic	Top level	Second level	Third level	Don't include
Academic	57.1% (8)	21.4% (3)	7.1% (1)	14.3% (2)
Accessibility	26.7% (4)	60.0% (9)	13.3% (2)	0.0% (0)
Business and consulting	33.3% (5)	46.7% (7)	13.3% (2)	6.7% (1)
Contracting, consulting, and globalization	13.3% (2)	60.0% (9)	20.0% (3)	6.7% (1)
E-learning and instructional design	40.0% (6)	40.0% (6)	20.0% (3)	0.0% (0)
Editing	26.7% (4)	73.3% (11)	0.0% (0)	0.0% (0)
Information architecture	20.0% (3)	73.3% (11)	0.0% (0)	6.7% (1)
Information design	66.7% (10)	33.3% (5)	0.0% (0)	0.0% (0)
Information development	57.1% (8)	42.9% (6)	0.0% (0)	0.0% (0)
Information management	28.6% (4)	57.1% (8)	14.3% (2)	0.0% (0)
Multimedia	14.3% (2)	50.0% (7)	35.7% (5)	0.0% (0)
Process management	28.6% (4)	57.1% (8)	14.3% (2)	0.0% (0)
Professional development	40.0% (6)	53.5% (8)	0.0% (0)	6.7% (1)
Professional organizations	26.7% (4)	26.7% (4)	40.0% (6)	6.7% (1)
Research	40.0% (6)	53.3% (8)	0.0% (0)	6.7% (1)
Scientific communication (health, safety, etc.)	13.3% (2)	73.3% (11)	13.3% (2)	0.0% (0)
Software	20.0% (3)	20.0% (3)	46.7% (7)	13.3% (2)
Structured authoring	14.3% (2)	64.3% (9)	21.4% (3)	0.0% (0)
Teaching and training	33.3% (5)	46.7% (7)	13.3% (2)	6.7% (1)
Technical writing and editing	66.7% (10)	33.3% (5)	0.0% (0)	0.0% (0)
Tools and technologies	26.7% (4)	26.7% (4)	33.3% (5)	13.3% (2)
Usability	40.0% (6)	53.3% (8)	6.7% (1)	0.0% (0)
User experience	46.7% (7)	33.3% (5)	13.3% (2)	6.7% (1)
Visual design	40.0% (6)	60.0% (9)	0.0% (0)	0.0% (0)
Web design and development	21.4% (3)	71.4% (10)	7.1% (1)	0.0% (0)

Note: Majority scores are shaded and raw scores provided in parentheses.

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expectations and preferences with respect to the existing taxonomy, navigation tools, and content needs. The purpose of this survey was to better understand the mental models of users and how they comprehend the information taxonomy of a body of knowledge. The participants included users with a basic familiarity with the portal, specifically, current and previous volunteers on the project. Although approximately 50 users were selected, only 16 completed the entire survey, or 32% of the target population. Other information taxonomies, such as the E-Server Technical Communication library, STC's list of Special Interest Groups (SIGs), and recent STC Summit programs, were consulted to provide a high level filter for possible categories and choices provided to the users in the survey.

The survey consisted of three sections. The first question asked users to examine an undifferentiated list of topics in the top three levels of the existing information taxonomy and rank them as first-level, second-level, third-level, or do not include. The second question required users to select from an alphabetical content index, compiled from the other portals, and rank each as first-level, second-level, third-level, or do not include in a possible subject index for the TCBOOK. This question served as a modified version of a card sort. The third question asked users to rank usefulness of existing navigation tools on a modified Likert scale (often, seldom, somewhat, never). Each section included an open-ended question permitting participants to suggest other items or to comment on their responses.

Participants showed a preference for the existing structural model, whether by design and/or by vested interest in the previous work that had been done to create it.

For the first section, a significant majority of participants ranked categories exactly the same as the existing structure, suggesting that existing information taxonomy conformed fairly well to their mental models.

For the second section, a majority of users selected the following topics as first-level choices in a topic index: academic, e-learning and instructional design, information design, information development, technical writing and editing, and user experience (see Table 2). From the list of topics provided, none were rated "don't include" by a majority of users. Suggested categories included marketing communication, globalization, translation, standards, and social or user-generated content. Other suggestions concerned terminology

semantics, such as using content management in place of information management.

For the third section, users ranked the usefulness of tools used in knowledge portals, including the TCBOOK. Five options were listed: community social media tools (forum links, social bookmarking), content assets (publication libraries, papers, and multimedia), keyword search, subject index, and user personas. While tools for keyword search, content assets, and subject index were listed by more than 90% as often and somewhat used, social media and user personal tools were rated highest as seldom or never used. Participants mentioned three other tools they preferred, including free text search, crowdsourcing and social tagging.

Despite inherent limitations to the survey, such as a small sample, overlapping responses, limited topic lists and number of questions, and users sometimes commenting outside the parameters of given instructions, there were two important insights that are applicable to a sustainable content strategy. Building or improving existing navigation tools was preferred to making significant changes to the existing information taxonomy. And, the interest in creating new or improved tools, such as a subject index and content asset list, suggested the need to promote greater access to content within the TCBOOK, not only from the ratings, but in particular, from the open ended comments and suggestions provided.

Focus Group Discussion and Production Tasks

The third major content strategy objective involved synthesizing the findings in a discussion-based format with the facilitation team to determine production tasks including revision to content, information taxonomies, navigation tools, and publication standards. Due to the overlapping nature of the specific content strategy goals and team functions, frequent discussion meetings that involved a shared decision making process were important. In some cases, the discussion involved the larger production team, content topic authors, and volunteers. For example, a full team presentation meeting was conducted to report on progress, present survey results, gather open-ended feedback on tasks, and solicit potential involvement in smaller projects. Several meeting attendees included participants from the user survey.

Information findability was one of the problems that had come up multiple times in discussions, including at larger group meetings and presentations at

recent STC Summits. Users reported difficulties finding domain topics within the field, regardless of expertise. Some users felt the range of existing tools failed to provide novices or practitioners easy access to domain level topics, such as visual design (found four levels in the existing information taxonomy). In some cases, a keyword search was the only way for inexperienced users to easily find content that was found at four or five levels within the information structure. As a result, a significant part of the solution needed to ensure third, fourth and fifth level topics more visible to users.

Users preferred the existing information taxonomy but still had findability issues in locating specific topics within the knowledge base. A subject index was listed as a preferred tool, and we considered exploring ways to integrate one or more as navigation tools. We also had to be mindful of the semantic differences between a subject index appropriate for a print publication and an electronic one. The former categorizes major topics and related keywords with related detail, much like a print-based index, while the latter is more of an associative information structure categorizing specializations and topics from the general to the specific. As a result, several prototypes were developed and tested, including an alphabetic subject index and potential subject lists based on user survey preferences and suggestions.

Developing a Conventional Subject Index. A prototype subject index was created to determine how a typical print-based subject index prototype might inform the development of a tool and its viability within a wiki-based information structure. The index was developed by selecting a random section from within the existing taxonomy and generating a list of terms for a single letter of the alphabet. While a useful tool for a print-based volume, there were many problems with using this kind of information model for an electronic-based delivery system. Many of these are indicative of the differences between print-based

and electronic-based indexing. First, topics within a wiki have no page numbers, which is problematic for software tools and frustrating for indexers. Most content management systems organize content by topic title, rather than page number, keyword, or other method. Second, as a continually evolving and changing document, maintaining an alphabetic subject index would require constant updating without a tool or module to automate the process. Third, online documents open up the possibility for more complex tagging and cross-linking. Online documents make use of more macro-level indexing through hyperlinks, navigation menus, and other indices. For example, within the index for “Cloud Computing,” healthcare industry, and software as a service are listed, but the index is built only to index relationships with other content within the same topic on a micro-level. These kinds of semantic complexities could only be managed by a human user with sufficient context sensitivity to make meaningful changes to the index.

Developing an Improved Information Taxonomy and Tools. Specific suggestions from the survey stated that user topic preferences should inform any new tools or changes to existing ones. The existing information model was somewhat problematic in finding specific topics such as “visual design” or “technical editing” from the navigation tools provided. In addition, the complexity of the information structure sometimes makes it difficult for users to discern domain knowledge from meta-content. The first task in addressing this complexity was to revise the main navigation to split content choices from function choices, and to simplify terms to reflect the semantic differences (see Figure 3).

The previous version intermixed content choices and functional choices and used titles that created indexing problems due to editing issues. The modified version simplifies titles and separates the domain

Figure 3. Previous (top) and Modified (bottom) navigation menus for the TCBOK.

TCBOK HOME	ABOUT TC	MANAGING YOUR TC CAREER	PRODUCING TC	RESEARCHING TC
About the STC TCBOK project	Using Personas to Access Information in the TCBOK	Volunteering for the TCBOK	eBook Basics for Technical Communicators	Legal Writing
TCBOK HOME	ABOUT TC	CAREERS	PRODUCING TC	RESEARCH
Contribute	Personas	LinkedIn	About Us	Contact Us

Content Strategy for a TC Body of Knowledge

content choices (home, about, careers, producing, research) from the meta-content (contribute, personas, LinkedIn, about us, contact us).

The second task was to create a subject index appropriate for TCBOOK, which improved overall information findability. Successful navigation tools tend to mirror patterns and show close alignment to the information taxonomies they support (Baehr, 2007). To create a subject index based on user preferences, the first and second level topic choices from the second question of the survey were combined. But the list was not completely representative of all user suggestions and benchmarked trends. User comments from the survey echoed many trends in the field, publications, conferences and other portals studied. The list represented also a range in individual interests and potential trends in the field, both of which are important to a body of knowledge. Some topics varied in the use of terminology, such as structured authoring and topic-based authoring while others had no content topics within the TCBOOK, such as scientific communication and multimedia. The facilitators' team discussed many of these factors and drafted a

three-tiered list. Three topic lists were created, instead of one, in an attempt to satisfy the needs for a subject index and topics that might be emerging or important (see Table 3).

Emerging topics included those that were suggested by users or started as new topics within the TCBOOK but never finished. Trending topics included suggested topics that were highly visible in current research. User feedback, Web analytics, expert focus groups, journal special issue topics are all potential sustainable sources of new items to add to the emerging and trending lists. As a sustainable content strategy goal, such lists can be advertised or featured within the body of knowledge to encourage new content contributions. Subsequent surveys, feedback, and integration of new tools and platform choices may also help these information taxonomies evolve to better suit the needs of users and represent trends in the field.

The third task involved revising policies and procedures for contributing and editing content. While only minor editorial changes were required, the revisions covered sections of the content and

Table 3. Three-tiered Topic Lists for the TCBOOK Home Page.

Subject index	Emerging	Trending
Accessibility	Big data	Application development
Business knowledge	Certification	Cloud computing
Consulting	Content strategy	Game development
Content strategy	Education	HTML 5
Education and training	Mobile strategies	Mobile computing
Globalization	Needs assessment	MOOCs
Information design	Project management	Tagging
Information development	Science communication	Universal Design
Information management		XML
Instructional design		
Research		
Social media		
Structured authoring		
Technical editing		
Technical writing		
Usability and user experience		
Visual design		
Web design and development		

copyright standards, style guidelines, and contributing content. As the body of knowledge expands and evolves, these standards must be updated to reflect how users contribute, comment and use content in meaningful ways. Such sustainable practices can lead to effective content strategy.

Conclusion and Discussion

Within the scope of an information development project that seeks to represent and codify a body of knowledge, complexities in content strategy exist with users (what is preferable and expected), information modeling tasks (what is comprehensible and consistent) and technology (what is feasible). User preferences cannot always be mapped directly onto a usable information model, but can be an essential part of a sustainable content strategy. Research was very revealing about user topic and navigation tool preferences, which helped make user-centered decisions on building navigation tools and lists for topic indices. The nature of the content itself and other field specific trends and terminology, however, must also have a discernible role and often determine the feasibility of user generated preferences and suggestions.

A significant success factor in developing a body of knowledge is maintaining an information taxonomy that makes content findable and accessible for its users. The breadth of possible topics from which to build an information taxonomy for a body of knowledge was quite large, as shown in the range of responses from the user survey and in the existing models studied. Integrating topics from within an existing knowledge base with topic suggestions from users and other taxonomies can be particularly challenging, though it is crucial to determine the optimum balance of user expectations and feasible choices in maintaining a viable information taxonomy and usable navigation tools.

Effective content strategy is iterative and evolving; over time it is sustainable and closely linked to standards and practices that govern a body of knowledge. Broad research of other models can help identify benchmarking trends among various venues within a discipline, and are but one piece among many in making decisions on information tools. However, there is no guarantee that users familiar with other information taxonomies will transfer their knowledge of using them, if newer models incorporate these trends.

Developing a body of knowledge, particularly over time, may require an integrated or hybrid approach to content strategy, involving a more complex set of factors. These include the human user, content assets, and sustainable practices to guarantee information findability and maximize usability. Content strategy goals and objectives are also a function of the maturity of the user base and the content itself within a body of knowledge.

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Community-Driven Information Quality Standards: How IBM Developed and Implemented Standards for Information Quality

Bob Vitas

Abstract

Purpose: Standards for information quality can help content developers within a company or enterprise create high-quality, high-value content, as well as an excellent user experience for its clients. This article explains how the content development community at IBM created meaningful standards, as well as the metrics to track their impact, as part of a closed-loop information quality process.

Method: Instead of having one group dictate what the standards will be, the content developers at IBM worked together as a community to identify key requirements from internal and external sources, tested the standards with a set of key products, and then put the standards to use in increasingly larger numbers of products.

Results: A community-driven approach to information quality standards allowed the IBM content developers to create standards that were meaningful to a variety of teams, ensuring that key aspects of information quality were addressed throughout the corporation. The use of metrics to track implementation and compliance allowed the IBM community to see when the standards were working, and when the standards needed to be updated to meet the changing needs of their clients.

Conclusions: Implementing information quality standards is an admirable goal, but it should not be the end of a company's information quality journey. This should be considered a closed loop or wheel, with continual analysis of compliance data, client feedback, and other metrics driving continual improvements in information quality.

Keywords: standards, metrics, information quality, user experience, community

Practitioner's Takeaway

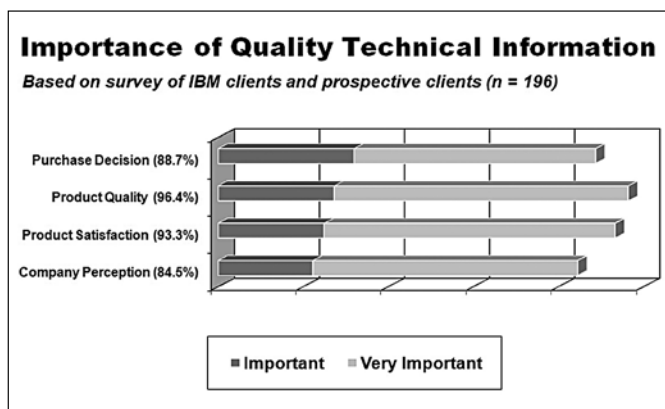
- Information quality is an admirable goal, but it should not be considered the end of a journey. Instead, it should be viewed as a closed loop or wheel, in which improvement never stops.
- Engaging the content development community in developing and maintaining information quality standards helps to ensure buy-in and understanding.
- The use of metrics to understand the quality of information can provide valuable insight into what kinds of standards are needed, when standards are having an impact, and when standards need to be altered or removed.

Community-Driven Information Quality Standards

Introduction

At IBM, we are developing our technical communications body of knowledge with a focus on content as a business asset. Figure 1 shows the results of a survey that we have on our Web site; the results consistently show that a high-quality technical information experience is important to customers. As described in “Telling the Right Story: Proving the Business Value of Content” (Riley, Ames, & Jones, 2013), we at IBM have data from 179 respondents (none of whom are IBM employees), surveyed from 2010 to 2013, which says that they rely on having high-quality technical content for the products they purchase, for everything from planning and installation to using and maintaining. These data show that customers look for content on configuration, troubleshooting, and administration. They expect the content they find to be accurate, they expect it to be role-appropriate, and they expect it to provide a consistent, high-quality information experience.

Figure 1. Results of IBM “Importance of High-Quality Technical Information” Survey



Given these types of requirements, corporations must find ways to ensure that their technical content meets certain criteria. These criteria come from internal sources—for example, corporate standards that all teams must comply with, guidelines that describe how to implement a standard, and the collateral and templates that help teams become compliant—as well as external sources—including customer requirements and industry standards. Having a consistent approach to meeting these criteria, regardless of their source, helps ensure that the customer’s total information experience is the best that it can be.

Defining which of these criteria are most important can be a daunting task, especially considering that technical content can come from a variety of sources within a corporation. Most customers are familiar with “product documentation”—the user manuals, installation and configuration guides, and other content that is shipped with a software or hardware product. However, there is also a wealth of other content produced by product support teams, marketing and sales teams, and customer education materials, just to name a few. These various sources of content often have different customer expectations and delivery mechanisms, creating conflicts when applying criteria to the breadth of technical content that is available.

Customers looking for technical content for IBM’s software and hardware products can find support content, educational materials, instructions that are specific to a given scenario or solution, and marketing and sales literature, all in addition to the product documentation. This means that focusing on the product documentation alone is only addressing one aspect of the content that is part of what we at IBM call the Total Information Experience. The Total Information Experience has to be consistent across the entire set of technical content, no matter how many content creators exist within the corporation. To bring some level of consistency, we at IBM needed to find a way to implement information quality standards for the Total Information Experience, regardless of who is creating the content.

There is a good deal of content in the technical communication literature about standards for writing and information quality. As an example, the Society for Technical Communication (n.d.) maintains an entire Web page on the various industry standards for writing, and the STC’s archives contain many articles and contributions about developing content strategies and creating common practices for style and strategic goals. These sources are excellent starting points, but we at IBM needed something more suited to our particular needs, both internally and externally.

At IBM, we initially approached the requirement for information quality standards within the Information Development (ID) domain, which encompasses the product documentation. The ID community at IBM is mature, having evolved over the last ten years or so into a worldwide group of ID professionals. The journey toward having community-defined information quality

standards began by first defining what it meant to have a high-quality information experience, and then identifying the standards and supporting guidelines and collateral that should be used by content creators to meet this definition. Next, we put a compliance mechanism in place to track how well teams were able to meet the requirements of the standards, and we identified metrics and key performance indicators (KPIs) that allowed us to track our progress. The standards were reviewed regularly for applicability and currency so that our product documentation continues to evolve and improve.

However, rather than having one group dictate what the information quality standards should be, the Corporate User Technologies Team within IBM engaged the information development community in these activities, building the standards with a grass-roots approach that ensured everyone had a chance to voice their opinion. Using this community approach gave everyone a sense of ownership of the standards.

Defining a High-Quality Information Experience

The Corporate User Technologies Team at IBM determined that there were three key aspects of a high-quality information experience: high-quality technical content, a high-quality user experience (which includes the delivery mechanism or application, navigation systems, and the search technology, among other things), and high-value content.

Defining High-Quality Technical Content

Several years ago, IBM Press published *Developing Quality Technical Information: A Handbook for Writers and Editors* (Hargis et al., 2004), which outlined an approach to achieving quality information. The book identified the following aspects of high-quality content:

- **Accuracy**—Freedom from mistake or error; adherence to fact or truth
- **Clarity**—Freedom from ambiguity or obscurity; the presentation of information in such a way that users understand it the first time
- **Completeness**—The inclusion of all necessary parts—and only those parts

- **Concreteness**—The inclusion of appropriate examples, scenarios, similes, analogies, specific language, and graphics
- **Organization**—A coherent arrangement of parts that makes sense to the user
- **Retrievability**—The presentation of information in a way that enables users to find specific items quickly and easily
- **Style**—Correctness and appropriateness of writing conventions and of words and phrases
- **Task orientation**—A focus on helping users do tasks that are associated with a product or tool in relation to their jobs
- **Visual effectiveness**—Attractiveness and enhanced meaning of information through the use of layout, illustrations, color, typography, icons, and other graphical devices

At IBM, we continue to use these nine aspects of high-quality technical content to drive consistency across our Information Development community.

Defining a High-Quality User Experience

While it is important to have high-quality technical content, we at IBM believe it is equally important to have a high-quality user experience that provides the right content to the right person, at the right time, and in the right way. While there are many ways in which users consume technical content, some things are common enough to the overall user experience. We have learned over the years that the user experience should address (at a minimum) these key pain points:

- **Content must be easy to find**—In today's environment, there is technical content everywhere. Within a corporation as large as IBM, we have tens of millions of Web pages, providing all kinds of content about the thousands of software and hardware products that are in service. It is important that we make this content easy to search so that customers can quickly find the piece of content they need to solve a particular problem or question. Search results should provide enough detail about the content choices so that the user can narrow down the results and identify the content they need.

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- **Content must have a consistent look and feel**—Customers who use IBM’s technical content expect it to be consistent in terms of quality, but also in terms of how it is presented. This is especially true in large enterprises such as IBM, where we have several different software and hardware brands that produce products that work together in solutions, but it is also true when comparing content for products within the same brand, or even content for different releases of the same product. If one piece of content presented to a user is different than another, the user experience can suffer. Navigation guides on a Web site might have different icons or placement on a page, forcing a customer to waste time figuring out how to get to the next piece of content. Content from the same company might be presented on a common Web site, but one piece may be viewable as an HTML file, while another might be presented as a PDF file. These are just two examples of how an inconsistent look and feel can impact the user’s experience.
- **Content must be relevant to the person and task at hand**—Having perfectly accurate content is an admirable goal, but it is only useful if it meets the customer’s needs at the time it is needed. For instance, a set of installation instructions might be highly detailed and accurate, but if a UNIX customer is presented with the installation instructions for a Windows operating system, it is of no use to the customer.
- **Content must be provided when and how a user needs it**—While the Internet has become a common place where users can find content, they don’t always use a browser to view the content. The user may be a support technician who is working in a remote location, or a network administrator in a “dark shop” that does not have Internet connectivity. The support technician might need to access content for a product on a tablet, rather than a computer, and they may need access to troubleshooting instructions more often than they need a product installation guide. The network administrator requires a disconnected environment that can operate locally, without access to the online content source, and they might require the installation guide more than the troubleshooting instructions. It is important that the user’s experience can be detected and understood so that

they get the right content at the right time, and in the right format.

Defining High-Value Content

In addition to having high-quality technical information and a high-quality user experience, we must be able to provide high-value content to our users. This goes beyond the idea of having technically accurate content that is easy to find, and encompasses the ideas of information architecture and taxonomy, in an attempt to provide information that is valuable to our users. First, however, this content must be considered as a valuable to your company. Content should be considered a business asset, something that doesn’t just explain how to use a product, but augments and enhances the overall product experience.

There are many different aspects of high-value content. The following definition and characteristics of high-value content were described in the “Point:Counterpoint” column in the February 2012 issue of *Intercom* (Riley, Bailie, & Ames, 2012). At its core, the authors said that high-value content is focused on users, content, and context, and exhibits the following characteristics:

- Leverages intelligence about users, their environment, the subject of the content, and context, and uses techniques such as minimalism to ensure appropriate choice of information to present and when and how to present it
- Incorporates a deep understanding of users, their business and task domains, and the products and solutions in those domains
- Is the product of research and analysis of users and experiences, which drives decisions about delivering information, such as answers to questions about “where” and “how”
- Uses modeling to understand complex information relationships
- Utilizes taxonomy and metadata to classify content for more efficient searching and customization
- Employs organization structures (such as navigation) and signposts (such as labels) that guide users to browse content and improve retrievability across chunks of information
- Takes advantage of information design methods to improve scanning within a chunk of information

- Synthesizes competing requirements to deliver innovation and excellence to users and readers
- Communicates effectively through all of the various dimensions of the information experience, such as content, context, interaction, algorithm (code), organization and structure, format, and visual design

In summary, high-value content makes the complex clear through all of the various dimensions of the information experience.

Our Information Development Community

Before going into the process we used to create our standards, let me describe our Information Development (ID) community. Our community is a world-wide organization made up of Information Development professionals in various roles, including technical writers and editors, people and project managers, build and tools specialists, and translation planners. The Information Development teams come from all parts of IBM, creating product documentation for both software and hardware products. Volunteers from the community work together on standing councils and in short-term workgroups, developing the collateral, best practices, guidelines, and standards that are used by every team to improve the quality of their information experience. The activities of these teams are governed by an advisory council that is made up of ID managers from each brand, and who work together to refine and implement our Information Development strategy. The overall strategy—which includes a common ID process, common tools and technologies, and common metrics for measuring success—is defined by the Corporate Information Development Team, with input from the advisory council and community leaders. In this way, the community is involved in all aspects of Information Development at IBM.

Community Development of Standards

With the definitions of high-quality, high-value content and user experience in place, we began the process of identifying the standards that would be required to ensure our content continued along its journey toward

becoming high-quality. Experts from across the ID community volunteered to be part of an Information Development Quality Council that was established to help define standards and metrics for information quality. This team worked several months to outline what standards would be needed, gathering input from the various councils and workgroups that were part of our ID community to identify the guidelines and collateral—templates, samples, best practices, and so forth—that were available to the ID community. These guidelines and collateral became the tools and techniques, or knowledge base, that would be used by all ID teams to understand and implement the various information quality standards. This team also looked at corporate requirements (such as legal notices and accessibility) and industry standards (such as *ISO/IEC FDIS 26514:2008(E) - Systems and software engineering — Requirements for designers and developers of user documentation* and the Darwin Information Typing Architecture standard) in addition to the standards that were needed for content quality.

In addition to identifying corporate and industry standards that we needed to comply with, the Information Development Quality Council used a variety of metrics and key performance indicators (KPIs) to evaluate the current state of our information. These metrics come from a variety of sources, including direct customer feedback from surveys and customer advocacy groups, problem reports and defect analysis, and satisfaction data. The data from this analysis helped to identify problem areas and customer pain points that needed to be addressed at a corporate level. For instance, defect metrics showed that we needed to improve the technical accuracy of our technical content, so a standard for performing information testing and technical reviews was created.

Once the ID standards were defined, they were broken into the following three major themes or buckets:

- **Corporate Standards**—This group included any requirement that had to be done by all Information Development teams, regardless of their products or the types of content they were producing. These corporate standards included legal requirements, translation and globalization requirements, and accessibility requirements. In many cases, the guidelines and collateral for these standards were

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developed outside of the ID community, and were referenced by the ID standards.

- **Information Quality Standards**—This group of standards was specific to the ID community, and focused on the different aspects of high value content, high-quality content, and a high-quality user experience.
- **As-Required Standards**—This group of standards was developed to address situations that were not required by all ID teams, but necessary for certain types of information. For example, if an ID team was going to produce a video-based tutorial, there might be specific standards for that type of content that would not apply to another team that was not producing video-based tutorials. These standards are not optional, but apply on an as-required basis.

With these definitions in place, the Corporate User Technologies Team decided that compliance with all the standards—regardless of which theme or bucket—was mandatory. Those standards that were “as-required” were mandatory if a team was producing content to which these standards applied. Because the idea of having information quality standards was new at the time, most standards were developed and written with a “crawl—walk—run” approach, where ID teams could move along a continuum and become progressively more compliant, and therefore, progressively improve the quality of their content. This approach required us to define compliance criteria that were built up, layer by layer, adding more and more rigor to teams as they advanced toward high quality.

As an example, the information testing and technical review described earlier was written so that, at a minimum or crawl level, ID teams were required to use checklists to show when they met certain aspects of high-quality content. The standard required more advanced team (those that were ready to “walk”) to create and use an information test plan that could be used by the ID team to track their testing progress. For the well-established teams (those that were ready to “run”), their information test plan had to be incorporated into the overall test plan for the software or hardware product so that the content could be tested alongside the product itself.

Each standard was then assigned an owner, usually one of the ID councils that helped to govern our community. We then put the standards in place with

plans to revisit them every six months so that the owners could review them for continued applicability and see when new standards needed to be created. This semi-annual review is performed with the assistance of the many ID councils and workgroups, so that the latest versions of collateral and guidelines can be incorporated into the standards and made available to the larger ID community as quickly as possible.

Measuring Compliance

With the standards in place, we needed to determine how best to track compliance. With a corporation as large as IBM, we opted to start small and track compliance for a subset of key products that are important to the business. These products and their technical content were usually translated into non-English languages, so it was important for the base English content to have high quality prior to translation. This allowed us to experiment with compliance reporting, and gave us the opportunity to see how well the ID teams for these products could comply with the standards. Compliance was measured by standard, but each product team was also given an overall assessment that was based on the number of compliances and non-compliances against the entire set of standards.

At IBM, we started with twenty-eight information quality standards, which were tracked against approximately one hundred key products.

We actually ended up using two mechanisms for determining the overall assessment of a product’s compliance. We initially used an algorithm that weighted certain standards heavier than others. The relative weighting was based on the need to improve information quality in areas where it was lagging behind at a corporate level, and so standards for these areas were given more weight than standards that focused on aspects of quality that all teams were readily compliant with. For instance, a standard requiring all ID teams to comply with the IBM Style Guidelines was given a lighter weight than a standard for adhering to information testing and technical review requirements because most IBM teams understood and complied with the IBM Style Guide, but many teams were struggling with ways to properly review and test their content for accuracy. In this way, we tracked an overall score for each product ID team. ID teams with higher scores were the teams that became

compliant with the higher-weighted standards faster than their counterparts. While this helped us to see which products achieved a “perfect score” and were fully compliant, it did not allow us to track products along the “crawl—walk—run” continuum.

Each software and hardware product in our initial group responded to a questionnaire that asked them to rate their compliance against the standards. Whenever a team was not compliant, they were given the opportunity to explain why they were not compliant. This compliance information was relayed to the owner of the standard, who then met with the non-compliant team to discuss a plan for becoming compliant. In some cases, a non-compliance was due to a legitimate business reason, and so this was noted in the questionnaire and the compliance data for that standard was not counted in the team’s overall assessment of compliance. Whenever a non-compliance could not be attributed to a valid business reason, the team was required to become compliant within one product release cycle.

Once the ID teams for the software and hardware products in our initial group had matured and were complying with the standards at a high rate, we switched to a mechanism that assigned up to three points for compliance with a given standard, based on how far along the “crawl walk run” continuum a team was. A non-compliance was assigned zero points. If a product ID team met the minimum requirements (“crawl”), they were assigned one point. Two points were assigned for meeting the next level of compliance requirements, and three points were assigned to an ID team that was fully compliant at the highest levels. In this way, a product ID team could report that they were fully compliant, and at which level: crawl, walk, or run. This process allowed us to identify where there might be issues with moving to the next level of compliance, and to help struggling teams achieve further improvements.

For both of these compliance mechanisms, our initial reports to management and executives were scoped to a high level—scores for all products in a given brand were collected into a brand-level overall score—to show general trends toward improving information quality. We did not point out specific product ID teams as “problems” when they were not compliant, but instead chose to work with those teams to identify the ways that they could become more compliant. We used the teams with high compliance scores as examples, gathering best practices and success stories to augment

our collateral. With this process in place, we saw steady increases in compliance among our key products. We were able to correlate the changes in compliance with trends in defect rates and problem areas, and were able to continually improve the standards and collateral to meet challenges and improve information quality.

Our initial hope was to have all of the ID teams from our key products to have at least a 70% overall compliance with all the standards. We also looked at each individual standard, and hoped to have at least 70% of the product ID teams comply with it. The first reports showed that, at the corporate level, the overall compliance number was about 69%. Within a year after creating the standard and helping the ID teams learn how to become compliant, the overall compliance was at 75%. Within two years, overall compliance was at 85%. Since then, the key products have consistently been over 90% in overall compliance.

We have also monitored our metrics and KPIs over time, and have seen improvements in key areas, such as technical accuracy. As an example, after creating the standard for information testing and technical review, we monitored the percentage of product defects that were attributed to inaccuracies in the content. This percentage has been tracked for nearly eight years, and the percentage of defects that were due to technical inaccuracies has consistently dropped each year. The overall percentage of inaccuracy defects has dropped by half since the standard was implemented.

We have also used metrics to show when things aren’t going so well, and have used this data to drive improvements to the processes and collateral we use. For instance, while the technical accuracy of our content was improving, customer feedback showed us that there were specific issues with the samples that were made available to our customers to show them how to use our products. In order to improve the quality of samples, we created a standard with specific guidelines on the requirements for various types of samples. We created clear definitions of the types of samples (from small “technology samples” that showed how to use a specific widget or function, to large “showcase samples” that showed how to use many product functions together to address a specific business scenario), and then provided specific criteria for documenting what the sample was for, how to validate that the sample was correct, and ensuring the usability of the sample once the customer started to use it.

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Standards for the Total Information Experience

At IBM, we began this journey toward having information quality standards for the corporation by engaging the Information Development domain and establishing an IBM-wide community of product content creators. We drew from the experience and expertise of the ID community, allowing the subject matter experts within the ID community to work together to improve information quality. This process worked well for the ID domain, but we also needed to consider the Total Information Experience. While each domain has its own quality measures, we need a way to standardize as much as possible at the corporate level so that the Total Information Experience has the same high quality, value, and user experience that we've developed in the product content. We are still in the early stages of this effort, but we have already started developing information quality standards for the Total Information Experience.

The challenge with these kinds of standards is that they have to apply to information creators who plan, develop, publish, and maintain their information using widely different practices and tools, not to mention different customer expectations. Thus, we had to develop standards that could be applied at a broader level, yet were focused on key aspects of information quality. It would also be ideal to have common processes and tools, where appropriate, so that everyone was working from the same playbook.

Working with experts from the various domains—including ID, Support, and Learning, among others—we identified the core standards that all teams must comply with. These standards included ensuring that content meets certain corporate requirements, ensuring that the content is technically accurate, ensuring that content is easy to find, and ensuring that content is kept current and up-to-date. These standards were written at a high level, often without requirements for tooling or process, and with specific metrics that could be used to track when compliance was met. This allowed each domain to determine whether they already had a process in place for ensuring compliance, and if they did, they were allowed to continue using that process, as long as it showed continual improvement over time.

For many aspects of the information quality standards that applied to high-quality content, IBM chose to use the Acrolinx IQ system to identify potential quality problems within pieces of content. Acrolinx IQ is available for a variety of source formats, and the system allowed us to write linguistic rules to flag problems with terminology, style, grammar, and other information quality characteristics, regardless of the format of the content. In this way, we can use a common tool across the Total Information Experience to help improve the quality of our content.

This movement toward a high-quality Total Information Experience led to a dilemma in terms of how to track improvements over time across a wide range of content, from product documentation to learning materials to support documents. Using a questionnaire approach was initially considered, but the amount of work to create and maintain a compliance tracking system—let alone the time it would take all teams to report on their compliance—was deemed too burdensome. Instead, we decided to use metrics and key performance indicators (KPIs) to track compliance. By assigning specific metrics and KPIs to each standard, we plan to see how our information quality is trending over time.

In many cases, we can track the changes in the metrics at a domain level—for instance, looking at the client feedback data for product documentation versus client feedback data for support documents—but often the metrics are at a more general or corporate level. Regardless of the level of granularity, we can see how the metrics change over time. If the metrics for a specific standard begin to trend in the wrong direction, we can work with the Total Information Experience community to investigate what is happening, and why compliance with a given standard is lagging. We can update the collateral for a domain or brand, or help them improve their processes, and work as a single team to improve the quality of the Total Information Experience.

While there is not a wealth of information about corporate trending on the scale of the Total Information Experience, we were able to gather historical data for the content produced by our ID teams, and have begun moving the ID community to this metrics-based approach for tracking compliance.

Conclusion: Take the Round Trip

This article describes how the teams at IBM approached the creation and tracking of information quality standards. Other corporations may have similar or different approaches. The key, however, is that the journey toward information quality standards is not a straight path from Point A to Point B. It should be thought of as a closed loop or wheel, where the work toward improvements never stops.

For instance, a group may implement a standard for information testing to improve the technical accuracy of your content. One may create test plan templates or quality checklists, and track product teams to specific goals and measurements. One day, you may see that these efforts have paid off, and the content is getting fewer defect reports from your customers. Even though the goal of improving technical accuracy has been reached, that should not be the end of the journey. The content might be technically accurate, but is it appropriate for the customer's role? Is it presented to them at the appropriate time? Is it relevant to the customer's situation?

Creating and implementing standards should be seen as the starting point on a never-ending journey. Our experience at IBM suggests taking an outside-in approach and always using customer feedback to understand their needs, and implementing standards that improve their experience. Keep track of what your peers and competitors are doing in the marketplace, such as when they update or improve their Web site to be more useful, or when they begin making content available for mobile devices. Watch for changes in industry standards that might affect the content you create. It is easy to get insulated and focus solely on your own organization, but in the end, you should strive to continually improve your customers' information experience. Drawing input from a variety of sources will help guide you to the next wave of quality improvements, and keep your content vital throughout its lifecycle.

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Jackie Damrau, Editor

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Mobile Usability

Jakob Nielsen and Raluca Budiú. 2013. 1st ed. Berkeley, CA: New Riders. [ISBN: 978-0-321-88448-0. 204 pages, including index. US\$34.99 (softcover).]



In previous publications, Jakob Nielsen has taught us much about usability. In his latest publication, Nielsen, along with Raluca Budiú, teach us about usability as related to content delivered on mobile devices such as smartphones, e-readers, game devices like Microsoft Kinect, and tablets.

Mobile Usability is designed to be read in hard-copy format. As I read the book, I realized the irony that the book is much easier to read as an actual book instead of reading a copy on a mobile device. However, that one comment is the only drawback to this book. I highly recommend it for any person who is working on delivering content that will be read on a mobile device.

The compact, 198-page book is bundled with a five-page index, two-page table of contents, and four-page preface. Nielsen and Budiú have written a book that's easy to read in a few days.

The book's organization lends itself for use as a reference guide by going to the Index. For example, if you're asked to maintain content on a traditional Web site that is accessible from a laptop and deliver the same content on an app that can be installed on smartphones and tablets, the Index gives you multiple ways to find what you need.

I love that the Index is thorough and seems to have been usability tested. As an aside, readers of this publication are savvy enough to know when someone has rushed a book to print. This book has not been rushed and the Index is an excellent example of what happens when you take the time to do something well. You have something that people can rely on for accurate results.

For the person who wants to read the book in a linear format, you can skim the Table of Contents to see how the authors have organized their ideas. Like the Index, this section was not rushed: It is a thorough outline of what you will find in the book.

As you start to read, you understand how the researchers organized their studies and how terrible mobile design was when the researchers started to gather data. Because the researchers began studying mobile usability in 2009, they have several years of data available as they present arguments about what defines mobile usability. And, as Nielsen and Budiú create a schema for mobile usability, they educate the reader using a variety of teaching methods.

For the person who learns by lecture, the text is accompanied by screen captures. For the person who learns by demonstration, you will find detailed case studies that make you feel like you're in the room as the researchers debrief the client. For the collaborator, you have the opportunity to go online and interact with the examples that are described. As I mentioned earlier, I recommend this books as a buy, and, yes, you're welcome.

Angela Robertson

Angela Robertson is a technical communicator at IBM in Research Triangle Park, NC. She has a MS degree in technical communication from North Carolina State University.

This Means This, This Means That: A User's Guide to Semiotics

Sean Hall. 2012. London, England: Laurence King Publishing, Ltd. [ISBN 978-1-85669-735-4. 192 pages. US\$29.95 (softcover).]



This Means This, This Means That is an accessible, entertaining, and useful introduction to semiotics. It can serve as a classroom text for a beginning semiotics course or as a source book for thinking more deeply and creatively about graphics and text as integrated sign systems.

Hall's organization and formatting itself illustrates his argument that semiotics subsumes textual, graphical, and interactive communication methods. He starts the introduction with words, yet very quickly shifts to graphical forms—tables, flowcharts, drawings, directory trees—to show rather than tell the reader what he means. Hall then adds an explicit interactive element by reversing the usual text-to-graphic flow. First, he presents an image with a question for the reader to ponder; then offers on the next page a primarily textual discussion of possible answers.

In one example, a glass door with an outward extending handle marked “Push” is accompanied by the question, “How do you open this door?” The “door handle looks as if it should be pulled, so people tend to pull it” (p. 48), even though the writing on the handle tells them it should be pushed. The written message contradicts the door handle’s “affordance,” the way the handle’s design invites or signifies a particular way in which to use it.

Hall observes that the right solution is to replace the door handle with a flat plate, the new “handle” inviting us to push rather than pull the door open. This way the handle in itself communicates how to use it, dispensing with the need for the written message, “Push.” We then realize the handle’s purpose and meaning purely in its physical shape as it becomes, in semiotic terms, an icon.

Another intriguing example involves two sticks with irregular notches, curves, and indentations carved into them. The sticks are actually maps created by the Inuit, who hold them “under their mittens and feel the contours with their fingers to discern patterns in the

coastline” (p. 28). Like the door handle, the Inuit maps are physical items that embody their meaning (or icons).

Hall also explores the ways semiotic concepts work in advertising, media, and art, concluding with comments on the narrative commonality of literature and science. Science “often describes its progress in a form that is storylike” (p. 170). Hall could further develop this insight to show how, considered in terms of their common semiotic deep structure, scientific causality and literary narrative (plot) function the same way. He might also explore the semiotics of legal argument, showing how narrative is necessary to constitute “facts.”

This Means This, This Means That offers a useful, clear, and stimulating guide to semiotics. It can also introduce fledgling designers to the theory of affordances—how products, understood semiotically, can signify their purpose purely through their design. This book is recommended for anyone interested in semiotics, whether as student, seasoned communicator, or product designer.

Donald R. Riccomini

Donald R. Riccomini is a member of STC and a lecturer in English at Santa Clara University, where he specializes in teaching engineering and technical communications. He previously spent twenty-three years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

Design for Care: Innovating Healthcare Experience

Peter H. Jones. 2013. Brooklyn, NY: Rosenfeld Media. [ISBN 1-933820-23-1. 356 pages, including index. US\$39.00 (softcover).]



Design for Care: Innovating Healthcare Experience addresses design issues encountered in healthcare with practical information that practitioners can use to innovate patient-centered healthcare services. This book is for designers, design researchers, healthcare professionals, clinical practitioners, and product and

services companies working in healthcare. Since these audiences typically work in their respective silos, it aims to bridge the knowledge gap and encourage collaboration to improve healthcare experiences.

Jones divided his book into three parts where he steps you through different perspectives of healthcare: Part I: Rethinking Care and Its Consumers, Part II: Rethinking Patients, and Part III: Rethinking Care Systems. Each part has chapters that discuss topics or design issues and offers practical information to address them.

I appreciated the structure of the chapters, starting with the story of Elena, a woman whose healthcare journey you follow throughout the book. Readers see her transition from being solely a consumer of health information to being a patient where she formulates her own experiences of the healthcare system. Jones builds upon Elena's story by pulling out her experiences and expanding on them, providing research that has been done on the topic. For example in Part I, Elena is a caregiver to her ailing father. As a caregiver, she wants to be informed about her father's condition, so she seeks out materials from articles to online forums that she can trust. The chapter that ensues discusses the topic of health information seeking. In addition the author provides a real world scenario through a case study and suggests a research method to address the topic covered in the chapter. My favorite parts of the book are the bulleted lists: design best practices, lessons learned (after the case study), and tips on techniques (after the methods section).

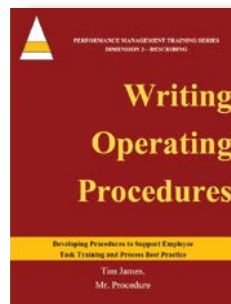
Design for Care is a great book that is comprehensive and full of applicable information. Even though there is a targeted set of audiences for this book, I think it is a good read or reference for anyone who is interested in understanding the current perspectives and obstacles to implementing innovations to services in healthcare.

Dawn Sakaguchi-Tang

Dawn Sakaguchi-Tang has a master's degree in Human-Centered Design and Communication from the University of Washington. She is currently working as a research consultant for a user centered design agency.

Writing Operating Procedures: Developing Procedures to Support Employee Task Training and Process Best Practice

C. T. James; "Mr. Procedure". 2012. Upland, CA: Mr. Procedure Productions. [147 pages. Free upon request (PDF).]



Writing Operating Procedures: Developing Procedures to Support Employee Task Training and Process Best Practice prepares process analysts and writers with varying levels of experience and expertise for success with procedures. James presents this work to explain how procedures can be created for use in training and everyday use as

part of a process. Written in an expository style—there are even quizzes—*Writing Operating Procedures* is an excellent work of the concise, yet illustrative, narrative writing seen in the very best procedures themselves. Indeed, the book itself is a darned good example of how to teach someone to do something.

James begins with two of the most often overlooked aspects of procedures: Purpose and Scope, and then moves on to explaining the relationships and roles of policy, work instructions, procedures, and records. He includes two thought-provoking illustrations of the perceived roles of policy, procedure, work instructions, and records (p. 10). With simple, yet very effective, illustrations to support key points, *Writing Operating Procedures* then gets down to business and takes us through the process of developing procedures while keeping in mind their purpose and scope.

James also asks us to think about the “place in the organization” each procedure has and repeatedly reminds us to stay true to purpose and scope when considering the structure of our procedures, and again with every sentence we write, with every illustration or photograph, and with each call-out or note. His “Seven Step Training Method” illustrates perfectly that although procedures have an important role, (indeed, they are step one of seven) environment, experience, equipment and hands on training for people also matter very much (p. 110).

The quiz questions at the end of each chapter ask for answers “in your own words” essay style. You can also use these as interview questions or discussion

points for process owners, employees, or other subject matter experts. James includes two appendices: one with guidance on formatting with good style, and one on the activities associated with procedure development.

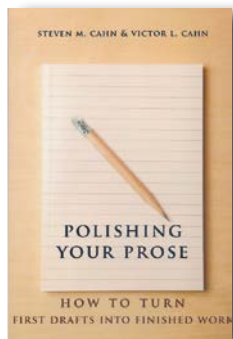
Overall, *Writing Operating Procedures* is a complete resource for new through mid-level procedure writers and policy analysts working everywhere, but especially those working in manufacturing, production, or process dense environments. I do think, however, that effective procedures are more complicated than just using color, emphasizing text, and adding illustrations. I would have liked for James to have included more discussion on the procedure life cycle, especially the approvals and the change process.

Dawnell K. Claessen

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Polishing Your Prose: How to Turn First Drafts Into Finished Work

Steven M. Cahn and Victor L. Cahn. 2013. New York, NY: Columbia University Press. [ISBN 978-0-231-16089-6. 85 pages. US\$14.95 (softcover).]



The Cahn brothers' *Polishing Your Prose: How to Turn First Drafts Into Finished Work* briefly offers advice on editing your material to make it more readable and enjoyable. The authors divide this book into three major sections: Part I contains 10 suggested strategies for improving your prose; Part II consists of three passages that they edit to

demonstrate these strategies while adding three supplemental strategies; and Part III contains a Conclusion and Epilogue.

Part I offers nothing that has not already been suggested by other similar books, for example, Strunk and White's *The Elements of Style*. The tone, however, is less strident in *Polishing Your Prose* than in *Elements*.

Each strategy includes an explanation, some examples, and sample sentences for reader practice. Several strategies relate to verbosity and wordiness; others relate to sentence structure. Yet the authors confusingly label the first two practice sets "samples for correction," while another six sets are labeled "samples for practice," and a third set, "samples for revision."

And then there is Part II. No previous books on style that I have seen provide what amounts to thinking-aloud protocols on how and why the reviser makes changes. The Cahns edit three sections from an early draft of a mathematician's informal essay while explaining why they are deleting words and phrases, adding additional words such as transitions, and reorganizing the sentences and paragraphs. I found much to disagree with when I read the reasons for what they were doing as well as the things that were left undone, but that is not the point. Rarely do authors understand how and why someone makes changes in their text. That insight into their methods is well worth the cost of this reasonably-priced book. The protocols are also useful when technical communicators edit others' work and need to explain changes.

The Conclusion adds little other than acknowledging that rewriting is never done. The Epilogue contains two autobiographical samples from the authors. The headnote to the samples says that they are presented so that the reader can see the authors' work and that, while they may have violated some of their strategies, the total effect of the prose vindicates them. These two points present problems: First, do we need another sample of their writing when we already have 67 pages of it, and second, if they violate their own strategies, doesn't that undermine the whole of Part I?

In spite of the shortcomings of Parts I and III, I would recommend this book based on Part II with the caveat that you focus on their protocols rather than on their actual changes.

Tom Warren

Tom Warren is an STC Fellow, Jay R. Gould Award for Excellence recipient, and professor emeritus of English (technical writing) at Oklahoma State University, where he established the BA, MA, and PhD technical writing programs. Past president of INTECOM, he serves as guest professor at the University of Paderborn, Germany.

Playing with Color: 50 Graphic Experiments for Exploring Color Design Principles

Richard Mehl. 2013. Beverly, MA: Rockport Publishers. [ISBN 978-1-59253-808-9. 192 pages, including index. US\$40.00 (softcover).]



As the title indicates, *Playing with Color* is about playing, but merely saying so oversimplifies what is really taking place. It isn't "just" about playing and it isn't "just" about color. Encoded into the DNA of each of these 50

experiments are some spectacular features that make this book a must-have for artists, designers, illustrators, or anyone interested in learning about color.

The history behind these experiments is impressive. Mehl went right to the source: the teaching philosophies and assignments of Josef Albers and Johannes Itten. If those names don't ring a bell, then the name of their mutual employer might. Both taught at the Bauhaus, the short-lived school of design recognized as the most influential of its kind. Many experiments presented in the book are modified forms of the very assignments Itten and Albers gave to their students to understand and learn to use color. The main purpose behind the experiments is not so much to produce an astounding design or work of art, but rather to learn about color through the experience of play.

Playing, for Albers, Itten, and Mehl, is an important part of the learning process. Mehl goes so far as to equate learning with playing because it encourages creative thought, problem solving, exploration, and discovery. It also encourages readers to keep asking "what if?" to see what happens. Mehl says, "As in game playing, each experience informs the next. Learning occurs" (p. 6). The end result, or goal of the book, is for readers to "develop...an eye for color" (p. 9) by experimenting with it. However, as mentioned earlier, the book isn't "just" about play or color.

Color choice is only part of the equation. While important, it sometimes takes a back seat to what readers do with that color. Each experiment requires readers to pay attention to not only the colors themselves, but how those colors interact with one another. To that end, the experiments center around some of the fundamental principles of design. Readers experiment with the size,

placement, and shape of fields of color, the proximity of certain colors to others, and patterns, among other things.

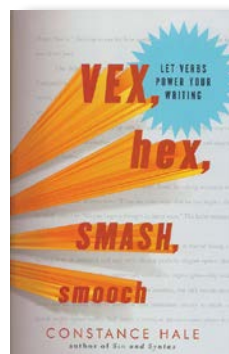
The real power of *Playing with Color* lies in actually doing the experiments, perhaps more than once. There is no right answer here, just as there is no "right" way to play. Certainly readers could simply read the book, look at the examples and get inspired, but it won't be until the readers really come out to play that the book will prove its worth as an outstanding source of inspiration, learning, and discovery.

Spencer Gee

Spencer Gee holds a master's degree in Composition and Rhetoric and teaches Freshman Composition at the University of Central Oklahoma. He also is working toward a degree in graphic design.

Vex, Hex, Smash, Smooch: Let Verbs Power Your Writing

Constance Hale. 2012. New York, NY: W. W. Norton & Company. [ISBN 978-0-393-08116-9. 396 pages, including index. US\$26.95.]



To energize our sentences, and to capture the human condition, writer Constance Hale calls us out to seize the power of verbs. "We need to think of the whole sentence as a mini-narrative" with the subject as the protagonist and the predicate the drama (p. 47).

This stylebook is not exclusively about verbs. Hale discusses the origins of language and language acquisition in the first two chapters. She then explores our language's Anglo-Saxon roots, the attempts at English grammar throughout history, the traditional eight parts of speech, sentence diagramming, and contemporary syntax and linguistics. Only after this mapping out of English does Hale focus on verbs. Beginning with the fifth chapter, she takes her readers on a tour of the English predicate: she defines tense, voice, and mood; whether a verb is transitive or intransitive; and whether a verb is factitive, causative, or ergative. The final chapters she dedicates to phrasal verbs and participles.

Covering all this verbal ground is daunting. Hale uses “vex, hex, smash, and smooch” as partitions to each chapter to impose order. The “Vex” heading indicates what is annoying or frustrating about a particular verb topic, for example, the overuse of static verbs. “Hex” alerts the reader to what is bad advice, such as always choose the Anglo-Saxon word over the Latin one. With “Smash,” Hale is telling us what bad habits are, as in the case of our tendency for redundancy. In addition, “Smooch” is her way of telling us what to embrace. For example, even authors with reputations for their long sentences know when to use brevity.

Yet, not everything about verbs can be corralled. Hale uses the last quarter of the book for chapter notes and six appendices about verbs, along with an index, epilogue, and bibliography. One of the book’s goals is to make “the back end of the sentence to behave” (p. 193), but clearly the English verb is too dynamic to be neatly categorized.

Hale would not want the verb to be tamed anyway, as indicated by her writing style. To say that the tone of the book is “sassy” may belie the book’s ambition and her respect of language. Hale does state that the book’s purpose is to impart “the art of making sentences that are as enticing, graceful, and sexy as the tango” (p. 13). Her own metaphors are lively, while her comments are a little caustic. Her vast array of amusing, relevant examples—from poetry, to political speeches, to pop culture—keep the book far from being a dry tome.

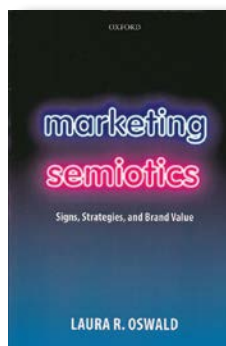
Like all stylebooks, this one has strong opinions. What sets *Vex, Hex, Smash, Smooch* apart is its comprehensiveness. The book is not about verbs, Hale admits, but about developing an engaging style, with our language’s roots and linguistic details as guides. Anyone who writes for a living would find this book an enriching read.

James Morgan

James Morgan has been in nonprofit communications for sixteen years.

Marketing Semiotics: Signs, Strategies, and Brand Value

Laura R. Oswald. 2012. New York, NY: Oxford University Press. [ISBN 978-0-19-956650-1. 218 pages, including index. US\$40.00 (softcover).]



Marketing Semiotics: Signs, Strategies, and Brand Value is an excellent book for the scholar-practitioner wanting to apply more thorough strategies around marketing and branding using a sound theoretical approach. It includes an extensive literature review that helps readers understand how marketing and advertising evolved and how

various theories emerged that continue to influence branding today. Balancing the detailed literature review are real-life case studies shared by Oswald, who brings 20 years of experience to the topic. If you are looking to understand marketing research and how you can apply it to your own marketing analyses, *Marketing Semiotics* is the answer. Oswald’s audiences are those who want to use “theory, method, and the cultural critique to align brands with the culture of consumers and inject creativity into strategic brand management” (p. 49).

It is when Oswald discusses case studies that the strength of the book reveals itself. Move through Chapters 1 and 2 to get to the meatier, example-laden later chapters. She discusses the marketing perils faced by Kodak as it lost market share due to corporate complacency. Oswald dives deeper into the story, however, by citing theoretical research and the “marketing myopia” (p. 73) often faced by organizations. Moving on from Kodak, she provides rich examples around marketing to women, new parents, and baby boomers. Oswald includes companies like Pampers, Coca Cola, and Blue Cross while covering multiple industries including the automobile, tobacco, and technology industries. Readers are sure to find something that resonates with their own work.

Application of the marketing strategies in *Marketing Semiotics* is made easier through Oswald’s inclusion of step-by-step product analyses. It lets us see how we might apply these steps to product analyses that we currently market or plan to market. Straightforward tables and graphics are simple to replicate in our own

analyses and are strategically positioned in this book to clarify key points or enrich tacit understanding while offering readers a break from the text.

Oswald also takes time to discuss strategic brand marketing from the perspective of the multicultural consumer landscape in which we all live and work. While only devoting one chapter to marketing and multi-cultural considerations, she again provides readers with a case study, this time about the Ford F-150, which drives home the considerations that must be taken across diverse audiences.

At the conclusion of *Marketing Semiotics*, readers take with them a more thorough understanding of marketing theory with practical, on-the-ground examples from someone who has clearly done her research and shared her knowledge in an accessible, applicable way. For those wanting more theory and more background, the book includes an extensive reference list. For those wanting to apply what they've learned, Oswald has provided a playground of techniques and thought processes to elevate the level of strategy in their brand marketing.

Liz Herman

Liz Herman, PhD, PMP, is a communications leader with 19 years of demonstrated achievements in delivering superior knowledge management solutions. She is a senior member of STC and is active in STC's Eastern Iowa Chapter. She currently directs a policy and professional development team for a federal government contractor.

The Story of Ain't: America, Its Language, and the Most Controversial Dictionary Ever Published

David Skinner. 2012. New York, NY: HarperCollins. [ISBN 978-0-06-202746-7. 352 pages, including index. US\$26.99.]



The Story of Ain't begins in 1934 and gives readers a great deal of historical detail about the making of *Webster's Third International Dictionary, Unabridged*, published in 1961. During these almost 30 years, there were several men (and a few women) who each had varying degrees of involvement in the final publication of *Webster's Third*. David Skinner seems to

follow a mostly chronological discussion of the major players, which can be hard to follow at times without a playbook. Thankfully, he includes a section in the back that lists the names of the people who appear in the book along with a short description for each. I imagine that this list could prove invaluable to a reader who wanted to more fully understand the “who” behind *Webster's Third*, or to those who at least want to keep up with the story being told.

Skinner gives readers a great deal of research into the backstory of *Webster's Third*, but in so doing may have lost sight of how much of this information most readers would want or need. Readers wanting to know about the major players behind *Webster's Third* will most likely enjoy the in-depth look into each of these men and women. However, readers interested only in how *Webster's Third* came to be such a controversial publication, as indicated by the title, might find themselves overwhelmed by the amount of historical information that comes before the discussion of *Webster's Third* after its publication. For these readers, much of the background information could have been left out and the book would still make sense.

It would seem that the title of *The Story of Ain't* overpromises, as “ain't” is only rarely discussed, and usually only in reference as to why the public relations campaign for *Webster's Third* was such a failure or why critics were so unforgiving of the changes in the new edition. However, the subtitle seems to be closer to the

mark as Skinner spends a great deal of time explaining how *Webster's Third* was meant to be a dictionary that showed how the English language was actually being used. *Webster's Third* was certainly a controversial publication according to *The Story of Ain't*, with critics vilifying not only the book and its material, but also Philip Gove, the mastermind behind the radical changes from *Webster's Second*.

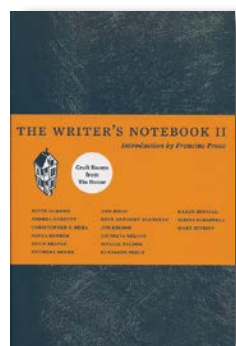
I believe that if the average reader finds the first thirty-one chapters of the book mildly interesting, then they will certainly enjoy the last nine chapters when *The Story of Ain't* focuses in on the actual publishing of, and response to, *Webster's Third*. Overall, I believe that this book has enough information to attract the deep historian and enough drama to interest the more casual reader.

Laura Dumin

Laura Dumin is an assistant professor and the director of technical writing at the University of Central Oklahoma.

The Writer's Notebook II: Craft Essays from Tin House

Christopher Beha. 2012. Portland, OR: Tin House Books. [ISBN 978-1-935639-46-6. 246 pages. US\$18.95 (softcover).]



What do prominent writers, writing teachers, and editors write about when they write about writing today? The answer, in part, comes in *The Writer's Notebook II: Craft Essays from Tin House*, a book that continues with a second set of essays.

The essays in *The Writer's Notebook II* come from the Tin House Summer Writer's

Workshop participants, Tin House magazine contributors, and Tin House Books authors. Based in Portland, Oregon, and New York City, Tin House is a publisher of books and a literary magazine.

Beginnings, middles, and endings—these topics, as you would expect, appear throughout the book's essays. Author Ann Hood, in her essay "Beginnings," gives us plenty of ideas about how to start a piece of writing. She

looks at what other successful writers do and includes writers such as Jane Austen and Charles Dickens. "It was a dark and stormy night" as a beginning, of course, makes it into the essay. You should have fun seeing what Hood has to say.

The idea of an effective beginning—according to Hood—is that it makes the reader want to know more and keep reading. The beginning, Hood argues can be *in media res*, facts, a character description, a setting, a philosophical statement—as Tolstoy does in Anna Karenina and the "happy families are all alike" statement (p. 14), dialogue, introduction, or what Hood calls an old saw (p. 9) such as "once upon a time."

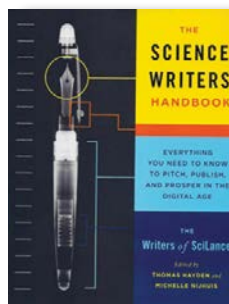
If you wonder as I do what happens at a writer's workshop of this sort, you can now wonder no more, at least when it comes to the workshop held by this impressive group. If you also enjoy thinking about writing outside of what is your normal sphere of technical communication, as I understand that many of us do, this read could be for you.

Jeanette Evans

Jeanette Evans is an STC Associate Fellow who is active in the NEO chapter serving as a co-chair on the academic relations and newsletter committees. Holding an MS in technical communication management from Mercer University, Jeanette has published in Intercom and presented at various STC and other events.

The Science Writers' Handbook: Everything You Need to Know to Pitch, Publish, and Prosper in the Digital Age

The Writers of SciLance as edited by Thomas Hayden and Michelle Nijhous. 2013. Boston, MA: Da Capo Press. [ISBN 978-0-7382-1656-0. 308 pages, including index. US\$17.50 (softcover).]



There really isn't very much difference between technical communication and science writing. As Alison Fromme points out about her co-authors, "Our common mission is to explain very complicated things with both maximum simplicity and maximum accuracy" (p. 4). Sound

familiar? *The Science Writers' Handbook* offers abundant instructions, advice, and real-life stories that apply to all writers, particularly those interested in starting or increasing a freelance writing business.

Like technical communicators, science writers have an obligation to “Getting it Right” (Chapter 4), and this book covers everything about the business of being a freelance science writer. As you would expect, there are chapters about gathering information, creating a gripping narrative, and working with editors. There are chapters on understanding contracts, writing queries, and managing your time. I am particularly impressed that they also include chapters on procrastination (Chapter 11, “Just Write the Friggin’ Thing Already!”), the challenges of a home office (Chapter 16, “Creating Creative Spaces”), and the importance of networking (Chapter 20, “Networking for the Nervous”).

A small member community of science writers, who call themselves SciLance, wrote *The Science Writers' Handbook*. SciLance is an online group of about 35 members who contributed to this book with their breadth of experiences. Most chapters are written in first person. Though their styles are different, it isn't easy to keep track of who is speaking in each chapter. This is only slightly startling when, for example, you think you're reading something written by a man until he talks about the challenges of writing while pregnant.

Minor quibbles aside (I would have moved that apostrophe in the title!), this book is a great guide for anyone considering the business of freelancing. The authors have also provided a companion Web site at <http://pitchpublishprosper.com> that provides more information on the topic and encourages audience interaction.

The Science Writers' Handbook has lots of information about getting started with science writing and getting started as a freelancer. Even if you are already familiar with the tidal nature of freelancing, this book has many great tips and suggestions. For example, several of the authors take time every year to evaluate their business status, and one even goes so far as to create her own annual report.

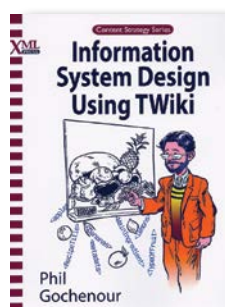
For technical communicators, this book offers a window into a related field we may not have considered. And expanding our knowledge (and then sharing that knowledge with others) is very much what technical communication is all about.

Brenda Huettner

Brenda Huettner is a technical communication consultant, a fellow in STC, and a member of the Management SIG, the Usability SIG, and the Southern Arizona chapter. She is co-author (with John Hedtko) of *RoboHelp for the Web* and has published numerous articles.

Information System Design Using TWiki

Phil Gochenour. 2012. Laguna Hills, CA: XML Press. [ISBN 978-0-9822191-7-1. 94 pages. US\$19.95 (softcover).]



Overall disappointing, Gochenour's text *Information System Design Using TWiki* suffers from several systemic problems. First is a regular lack of context for and continuity between content sections. For example, after Chapter 1's good, brief introduction to wikis, the author jumps into wiki markup and why

TWiki is good wiki software. No transition is offered; no relationship is established. Background information about how wikis operate, insights into wiki culture, best wiki-editing practices, or how wiki markup relates to any of these schemes would have been helpful. Similarly, four pages in, Gochenour jumps into TWiki variables. The five-line paragraph introducing the variables is not sufficient to frame or explain why he places the material here. Then Gochenour adds material about plug-ins and documentation. And so it goes for most of the book. Why discuss these aspects when readers still don't know what TWiki can do? If the book is for TWiki veterans, then that should be clear from the start. Sadly, few items are given the depth or explanation they need for proper understanding.

Information quality is the second problem. In Chapter 6, Gochenour introduces Information System Design (ISD). No definition of information systems or ISD is offered. This is problematic because ISD is the book's core focus. If Gochenour assumes a specific or shared definition, he should make that explicit. Chapter 9 has a section labeled “Users and Usability,” and the section on users is passable. Ironically, the basic overview Gochenour provides on users and usability is

the kind of overview that should have been provided for TWiki at the start of the book. Moreover, the three paragraphs on page 46 about usability testing are useless and off target. Gochenour urges the reader to have users test the usability of specific content—in this case, recipes—instead of seeking feedback on the usability of the system. Because a primary goal of usability is testing the usability of systems and not just the content that comprise parts of said system, and since system is a part of the book's title, the reader's attention is at best misdirected—at worst, the reader is misinformed.

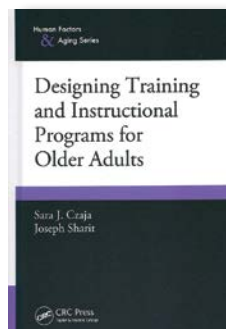
Certainly, multiple sections of *Information System Design Using TWiki* are handy for people already using TWiki, and Gochenour provides plenty of examples, directions, and tools on how to work within TWiki. While this text could work within a course context, that course would need to provide the necessary framing and narrative. As an instructor considering TWiki as a tool for potential use in my instructional design course, the book left me frustrated and confused. It reads like a compilation of course notes or instructions; unfortunately, it is missing the framing and narrative necessary to make sense of and properly understand the material presented.

Gregory Zobel

Gregory Zobel is an assistant professor of educational technology at Western Oregon University. Trained in technical communication, usability, and rhetoric, he supports and trains educators employing technology to enhance and enrich learner engagement, accessibility, and content delivery in person and online.

Designing Training and Instructional Programs for Older Adults

Sara J. Czaja and Joseph Sharit. 2013. Boca Raton, FL: CRC Press. [ISBN 978-1-4398-4787-9. 310 pages, including index. US\$ 69.95.]



In *Designing Training and Instructional Programs for Older Adults*, Czaja and Sharit quickly answer why trainers and instructional designers must consider older adults—people 65 and older will number one billion worldwide by the year 2030. The authors, however, do not merely rely on population numbers to

emphasize the importance of considering this audience. Czaja and Sharit detail continuing changes in technology and healthcare that serve as catalysts for older adults to seek out training and they dispel the myth that older adults are not interested in learning.

Czaja and Sharit use a human factors approach where “the characteristics of user populations must be considered in the design of products, tasks, environments, and programs that people use” (p. 11). Trainers and instructional designers are likely to connect with this approach having conducted needs analyses that focus on what their product users need. Trainers and instructional designers looking for a how-to are likely to be disappointed, although the authors are clear that *Designing Training* is not a how-to or prescriptive approach to training and design for the older adult.

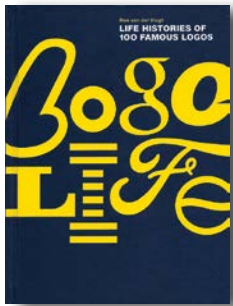
What readers will find is a comprehensive list of recommendations at the end of each chapter. While some repetition exists between the chapters and the sheer number of recommendations can be overwhelming, any trainer or designer interested in thinking more in-depth about this audience should consider *Designing Training*. As for where to start, the authors make a convincing case to start with the time-tested and proven needs analysis and the older adults' motivation for learning. The added benefit is that readers will also take away in-depth information about how issues like cognition, visual acuity, memory and retention, and motor skills affect the older adult learner.

Liz Herman

Liz Herman, PhD, PMP, is a communications leader with 19 years of demonstrated achievements in delivering superior knowledge management solutions. She is a senior member of STC and is active in STC's Eastern Iowa Chapter. She currently directs a policy and professional development team for a federal government contractor.

Logo Life: Life Histories of 100 Famous Logos

Ron van der Vlugt. 2012. Amsterdam, The Netherlands: BIS Publishers. [ISBN 978-90-6369-260-5. 224 pages. US\$32.00.]



In *Logo Life: Life Histories of 100 Famous Logos*, author Ron Van der Vlugt investigates the stories behind the evolution of 100 logos from around the world, and their progression into their most current version. The book includes at a minimum a two-page spread for each logo, sometimes extending to a four-

page spread, highlighting a description as well as several incarnations of each logo, and sometimes an advertisement or two featuring one of the logo versions in action. Van der Vlugt describes in the text how the logo was initially developed going back to the its earliest inception, including in the description any major and whenever possible, all minor adjustments over the years that have led to the end result and most current solution. Readers may be surprised at just how often logos are updated, and how many minor adjustments that each of the logos within the book have undergone over the years. Many of those small changes may have even gone unnoticed.

Insight has been given as to why many of the changes have been made over the years. Some of the logos needed to be simplified and modernized, having been developed during an earlier time such as the Victorian era, where a more intricate and complex logo was appreciated. Others were changed to reflect name changes or mergers with other companies. Also major logo changes can also be reflected in changes in goods or services a company offers. These insights can help

designers, and business owners to better understand the necessity of changing or updating a logo, when to do it and why.

van der Vlugt is a creative director and principal at SOGOOD, a design firm that focuses on corporate identity design. He has worked for a number of the companies whose brands he features in *Logo Life*. In the introduction, he states, "The objective...was to collect an interesting mixture of... well-known international companies and brands to gain better understanding of the reasons why logos look the way they do" (p. i). One issue that van der Vlugt does not address in this volume is why he selected these logos. Was there any sort of criteria that determined which logos got in and which ones did not? The subtitle of the text eludes that only famous logos were selected, but what criteria did he use to determine the level of fame? It would be more beneficial from an academic standpoint if these questions were addressed.

Logo Life was an entertaining and quick read, with a good balance of visuals to text. Readers will learn the basic histories of many of their favorite brands and possibly learn about some international brands that they are not as familiar with as well.

Amanda Horton

Amanda Horton holds an MFA in Design and currently teaches graduate and undergraduate courses at the University of Central Oklahoma in the areas of design technology, design studio and history of graphic design. She serves as a book reviewer for *Technical Communication*.

Ultimate Guide to Pinterest for Business

Karen Leland. 2013. Irvine, CA: Entrepreneur Press. [ISBN 978-1-59918-508-8. 190 pages, including index. US\$21.95 (softcover).]



Why Pinterest? Karen Leland's book helps position this image-centered social media firmly in your business marketing plan. Consider using Pinterest, especially if your target audience is women 35 years and older who admire and purchase beautiful things to enjoy or give.

Leland holds your hand from signing up for a Pinterest account, to setting up one or more boards, to inviting followers. A board is a collection of pinned images and can be public or private. Select one image as the cover for that board.

Sign up as a business if opening a Pinterest account for your company. Pinterest will verify your Web site and instruct you on how to add Pin It buttons to product Web pages.

Leland also explains the fine art of pinning. To pin means to add an image (or pin it) to a board you have created. Images can be repinned from existing Web sites or boards created by others. Give credit to anyone whose image you pin. Business-related photographs or original art should be watermarked.

Pinning for sales. A business account can pin product images that show real-time pricing, availability, and where to buy. Follow instructions in Pinterest's business section for how to prepare your Web site to use this type of Rich Pins. The Gifts option lets someone searching for gifts to select a price to search by. Pinned images of Quick Response (QR) codes can also drive traffic to your site.

Pinning from another Web site. The new Pin It bookmarklet places an icon at the top of your browser. When clicked, pinnable images on the current Web page display. Select the image to pin and it will appear in your open board. Check the Goodies page in Pinterest to get this bookmarklet.

There are several ways to invite followers. You can use the Pinterest search if you know a follower's Pinterest name. Use the hash tag to search for followers by topic or location. For example, #Boston locates images that have Boston in the comment. Or you may want to sign

up through your Facebook or Yahoo accounts to retain existing followers.

Leland recommends contests and group boards for connecting with your community and adding new followers. Make the rules clear. Likewise, make the prize a winner.

Learning the language and courtesy rules of Pinterest takes some getting used to, though you should find it quite intuitive. If so, then why buy this book?

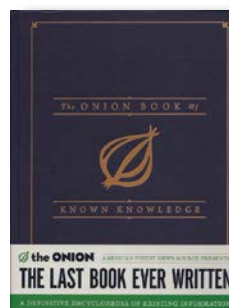
Besides business hints throughout, Chapter 14 focuses on how Pinterest can be used by various professions from "A" (architects) to "Z" (zoos). For example, a published author could create a separate board for each book title and then invite fans to follow.

Donna Ford

Donna Ford is a senior member of STC and has served on her local chapter's board. She has been a technical writer since 1987 in the hardware, software, and government health care industries. She holds a certificate in information design from Bentley College.

The Onion Book of Known Knowledge: A Definitive Encyclopaedia of Existing Information

Joe Randazzo, Editor in Chief. 2012. New York, NY: Little, Brown and Company. [ISBN 978-0-316-13326-5. 244 pages. US\$29.99.]



I'm not sure when I first bumped into *The Onion*, but I do recall my reactions—delight that such an organization existed and mostly dismay that I was not made aware of it the second of its inception in 1988. *The Onion* is a satirical news agency (I use that term loosely), although every now and then a serious news agency will report on

one of its stories, much to the chagrin of regular Onion readers and to the horror of soon-to-be-fired editors.

The Onion Book of Known Knowledge is an encyclopedia cataloguing...well, all the known knowledge in the universe—an impressive feat for 244 pages. The copyright notice at the end of the volume says it all: "...*The Onion* has acquired the

rights to all knowledge, past and present, and thus any future written or published words, sentences, thought fragments, scientific works, metaphors, or images containing any information whatsoever must be first cleared and licensed with *The Onion*" (p. 244).

Like *The Onion* Web site and newspaper, the encyclopedia is filled with articles calling out mundanely profound truths such as "Youngstown, **Ohio**, [a] city in eastern part of Ohio and one of the many places in the world where a human being can be born, go to school, get a job, and pass away" (p. 230). Adding variety to the mix are hilariously coy entries such as "**Dadaism**, bubblegum anxiety flapjack explosion bang" (p. 51). My personal favorite are the entries that break the third wall—"Notary Public, Dave's a notary public. Weird, right? But apparently he is" (p. 142).

Articles in *The Onion* are sometimes mistaken for real news because they mimic the Associated Press style so well. Following that convention, *The Onion Book of Known Knowledge* is designed exactly how one would expect a mainstream encyclopedia to be designed. The book includes full color pictures, graphs, and diagrams situated in crisp sidebars and clean call-out boxes. It occurs to me that good satire mimics that which it seeks to spoof. In this regard, *The Onion* is masterful.

Here's the test. Can you actually learn useful information from *The Onion*? I think yes. That information, however, does not necessarily pertain to facts of the subject in question, but rather about how that subject is being digested by society. From reading the section on Ancient Egypt, for instance, a reader can glean some sad realities about the American consume culture.

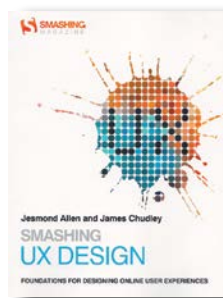
I'm not sure I'll ever read *The Onion Book of Known Knowledge* from cover to cover. It's not that type of book. I do know I will swipe it off my shelf time and time again to take the edge off a long day or put a smile on a scowling face. For that it's worth the price of admission.

Gary Hernandez

Gary Hernandez is a communications director for BP. He received his English literature MA from George Mason University and received his technical writing MS from Utah State University. Gary belongs to STC and IABC.

Smashing UX Design: Foundations for Designing Online User Experiences

Jesmond Allen and James Chudley. 2012. Chichester, United Kingdom: John Wiley & Sons, Ltd. [ISBN 978-0-470-66685-2. 418 pages, including index. \$44.99 USD (softcover).]



In recent years, there has been a "...huge growth in the awareness of the importance of user experience" (p. 26). *Smashing UX Design: Foundations for Designing Online User Experiences* covers the whole range of user-centered design (UCD). From my point of view, there seems to be a focus on

usability testing, but that is only a portion of UCD. This book covers not only usability, but all the other types of research and how to apply the data you gather. "As user-centered design becomes a more and more widely adopted design approach, the issue of usability stifling creativity and innovation will become less of an issue" (p. 77) as companies move forward in understanding the importance of user experience (UX).

Smashing UX Design starts with an overview of what UX design involves: how to do the research, how to implement that research in design, and examples of components you will typically need to design Web projects. Each step in the overall process is expanded with why, when, and how to use each method or tool. Allen and Chudley include many scenarios of why you would use a method or tool and examples of what it would look like. They explain: "Choose to run a requirements workshop if you have a large, complex project where different stakeholders and different requirements may conflict" (p. 60).

The authors write from their own viewpoints from working with UX in a consulting firm. This viewpoint lets them cover all levels of information you might need to gather. "I once conducted some contextual research within a small and very busy mobile phone store. I quickly became aware..." (p. 110).

Allen and Chudley write in a personal manner, like they are teaching you the UX process face-to-face. For example, they encourage you to "...think of UX as a project philosophy as opposed to a set of tools, methods, and deliverables" (p. 31). The authors also explain why they find UCD useful. "I like to think of analytics as

providing the ‘what’ to which user experience research can provide the ‘why’” (p. 113).

Allen and Chudley are obviously very passionate about UX design since they often write about the “joys” of UX design: “One of the joys of being UX consultants is getting to work with lots of different disciplines on a daily basis” (p. 40). One of the most astounding “joys” I found was that they find it “really interesting to sift through the data...” (p. 114).

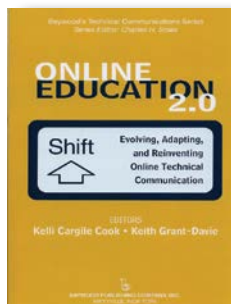
Smashing UX Design is a great starting point and reference book for completing UX design. It is easy to read with plenty of helpful examples. The book has a few typos, but the personality and useful information far outshine any shortcomings. I am going to share it around my office.

Angela Boyle

Angela Boyle is a technical writer for Tyler Technologies, Inc., where she has worked for seven years. She graduated from the University of Washington with a BS in Technical Communication.

Online Education 2.0: Evolving, Adapting, and Reinventing Online Technical Communication

Kelli Cargile Cook and Keith Grant-Davie, eds. 2013. Amityville, NY: Baywood Publishing, Inc. [ISBN 978-0-89503-806-7. 328 pages, including index. US\$62.95 (softcover).]



Eight years after Cargile Cook and Grant-Davie's award-winning *Online Education: Global Questions, Local Answers*, they present another anthology: *Online Education 2.0*. This anthology is a triptych: evolving programs and faculty; adapting to changing student needs and abilities; and reinventing course contents and

materials. This review focuses on an implicit theme that Jaramillo-Santoy and Cano-Monreal point to in Chapter 5: Marjorie Davis' (2005) assertion that “technical communicators are ideally situated to use their theoretical knowledge to help in the design of online education programs” (p. 92). Viewing *Online Education 2.0* through a lens of locating resources to help

colleagues within and beyond our own field, four core chapter resources emerge.

Jaramillo-Santoy and Cano-Monreal's “Training Faculty for Online Instruction” offers an important grounding in the importance of mentoring faculty and the role that technical communicators can have in their relationships with other faculty. This can provide a shared perspective and vocabulary with non-technical communication stakeholders. The authors also provide a scalable, replicable faculty peer mentoring model that could be applied at diverse institutions.

While mentoring and collaboration are important at the start of an online teaching career, Meloncon and Arduser show how this same pattern can support faculty in Communities of Practice (CoP). The authors present CoP as a model for sustainable online course development in Chapter 4. This chapter offers a possible answer to inevitable questions of time, resources, and funding. Meloncon and Arduser make it clear that CoP offer more than a sustainable approach to content and course generation. CoP can generate community, dialogue, and value while leaving participants free to choose their engagement level.

Having established grounding in mentoring and a sustainable development process, Jones' chapter “Expanding the Scaffolding of the Online Undergraduate Technical Communication Course” makes the important step into reevaluating how we design and present courses to students. Jones makes a compelling argument for using a folder-based approach to scaffold content and integrate transparency in the course. He does not suggest replacing linear walk-through modules. The folder's approach may be a welcome alternative to the universal walk-through for faculty new to online teaching or online working with modules.

Finally, in Chapter 11, Cason and Jenkins discuss how to effectively adapt instructional documents from classrooms to online learning environments. They set out their development in a progressive, sustainable, and pedagogically sound approach. The authors model how faculty can, through critical and reflective analysis of course content and goals, adapt and modify existing resources to meet different online learning goals.

Cargile Cook and Grant-Davie have compiled resources here that empower us to prove Marjorie Davis' assertion about the value technical communicators can

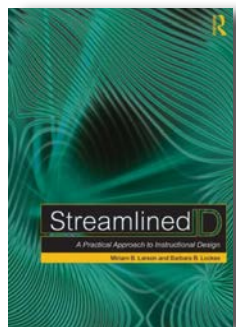
bring to online education. It would be a shame to not share such riches with others.

Gregory Zobel

Gregory Zobel is an assistant professor of educational technology at Western Oregon University. Trained in technical communication, usability, and rhetoric, he supports and trains educators employing technology to enhance and enrich learner engagement, accessibility, and content delivery in person and online.

Streamlined ID: A Practical Guide to Instructional Design

Miriam B. Larson and Barbara B. Lockee. 2014. New York, NY: Routledge. [ISBN 978-0-415-50518-5. 278 pages, including index. US\$49.95 (softcover).]



Streamlined ID is rooted in an iterative approach to the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) method of instructional design (ID). Larson and Lockee's approach lets instructional designers keep the historical and experiential benefits of working with ADDIE; the iterative angle

freed practitioners from some of ADDIE's shortcomings. The authors' use of iterative design and the sustainable ID practices that increase efficiency and shorten turn-around time together make the book worth reading. More than an interesting approach to ID, *Streamlined ID* is a great textbook.

The introduction and opening chapter provide a useful, referenced, and clearly written overview of concepts core to understanding and practicing ID. Their presentation can build new knowledge for novices or improve practitioners' existing skill sets. To achieve this, Larson and Lockee's definitions of terms and descriptions of concepts are short enough to establish common ground with practitioners, yet long enough to orient novices. Multiple references and examples are provided for readers who want additional background. The authors continue this thoughtful and practical awareness of their reading audiences from start to end.

Streamlined ID is easy to use. As a reader, Larson and Lockee's use of tables, headings, and bullets make

it easy to scan and relocate important sections. The text embodies what it teaches. This also lets the book serve double duty: modeling best practices while educating the novice while simultaneously providing practitioners references and tools. As a teacher, the text is thorough and detailed enough to be the primary text for an ID course at the undergraduate or graduate level. Depending on learning populations and course outcomes, the text could be easily supplemented. For faculty who prefer to compile their own texts and readings, *Streamlined ID*'s chapters are self-sufficient enough to be excerpted. Thus, if a course has a weak spot, *Streamlined ID* may well have a chapter to fill that gap. The book's tables are its richest resource. I have referred back to them repeatedly and have already made copies for my own reference and use.

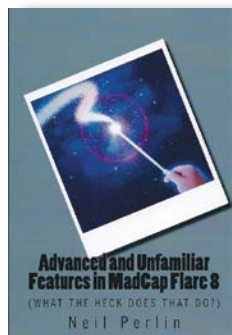
The best reason to buy *Streamlined ID* is that Lockee and Larson deliver what they promise on the back cover: "a generalizable approach to instructional design and development—on that addresses the needs of ID novices as well as practitioners in a variety of career settings." From start to finish, *Streamlined ID* is a Leatherman tool for instructional designers—only this comes with instructions.

Gregory Zobel

Gregory Zobel is an assistant professor of educational technology at Western Oregon University. Trained in technical communication, usability, and rhetoric, he supports and trains educators employing technology to enhance and enrich learner engagement, accessibility, and content delivery in person and online.

Advanced and Unfamiliar Features in MadCap Flare 8: What the Heck Does That Do?

Neil Perlin. 2012. Seattle, WA: CreateSpace. [ISBN: 978-1-4818-5495-5. 134 pages, including index. US\$29.99 (softcover).]



MadCap Flare is a powerful, flexible, feature-rich help authoring tool. Flare stores content in XML files and then draws on those files to output to a wide range of print, online, and mobile formats. Flare can include or exclude chunks of information as needed, assemble indexes, tables of contents, and glossaries;

manage drop-down lists and togglers; and lets you customize almost anything that comes to mind. But working such magic comes at a cost. In many cases, there are several ways to approach a desired end, each with advantages and limitations. To get the most out of Flare you need to understand a myriad of features, choices, and settings. The learning curve can be steep, especially for the self-taught.

With *Advanced and Unfamiliar Features in MadCap Flare 8: What the Heck Does That Do?*, Neil Perlin provides a valuable guide to some 40 features he believes most need additional explanation. He draws on more than twenty years' experience working with help authoring tools and seven years consulting and training as a MadCap Flare consultant in making his selections for this book. (While the title specifies Flare 8, the information is still valid for Flare 9.)

In clear, concise, stand-alone topics, Perlin covers the use of master pages *versus* page layouts; linked *versus* unlinked table of contents headings; hyperlinks *versus* cross-references; using the float property to control the positioning of graphics elements; the use of a Flare feature, called Mediums (to set alternate properties for a particular style); several approaches for creating context sensitive help; and more. He also discusses Flare's use with many of the newly evolving technologies and platforms, such as HTML 5, Adobe's WebHelp AIR, and Mobile outputs such as ePub, WebHelp, and WebHelp Mobile.

Those who must work with legacy documents in Microsoft Word will appreciate his advice on getting

the most out of Flare's Word import features, which involve choices whose implications may not be entirely clear. Should you preserve Word styles or strip them away? How should you best split long topics into shorter topics? And how does the Avoid Creating Empty Topics option work, and how should it best be used?

What makes the book stand out is that Perlin explains not just how to use a particular feature, but why you might want (or not want) to use it. He often recommends best practices, but also gives you the information you need to choose for yourself. Especially valuable is Perlin's knowledge of the many "gotchas"—such as features that cause problems when used with other features or that apply only to a particular platform—that exist in the rapidly evolving help universe. As its name suggests, this is not a beginner's how-to-get-started guide, but if you are serious about getting the most out of Flare, you'll want it on your shelf.

Patrick Lufkin

Patrick Lufkin is an STC Associate Fellow with experience in computer documentation, newsletter production, and public relations. He reads widely in science, history, and current affairs, as well as on writing and editing. He chairs the Gordon Scholarship for technical communication and co-chairs the Northern California technical communication competition.

The New Digital Age: Reshaping the Future of People, Nations and Business

Eric Schmidt and Jared Cohen. 2013. New York, NY: Alfred A. Knopf. [ISBN: 978-0-307-95713-9. 320 pages, including index. US\$26.95]



If you would like a glimpse into how technology will shape the future, *The New Digital Age: Reshaping the Future of People, Nations and Business* provides pragmatic perspectives on “how humans interact with, implement, adapt to and exploit technologies in their environment” (p. 11). It is not a book that teaches about

technology; rather, it is a fast-paced book that shows what humans can do with technology.

The book is a mix of technological dystopia and utopia. Schmidt and Cohen are doing more than

making predictions, though. Their look into the future is based on insightful aggregation of events that are already happening. It is somewhat difficult to accept the premise that we will have the ability to grow new organs that replace old or diseased ones or that holograph boxes will be as common as televisions are today. But, the technological advances that are leading up to this reality are well documented and let you see what is currently paving the way for a future based on connectivity and personalization.

What is interesting is that Schmidt and Cohen report on the potential for both good and evil and for liberating and restrictive use of technology by nations, individuals, and organizations (both philanthropic and terrorist). The future of our identity and nations, of revolution, terrorism, and military, are all taken into account. And when I say “our,” I mean it in a global sense because all cultures experience and advance technology in very different ways, and the role that governments play in our lives, thus our future, is taken into account. Each chapter carefully considers how democratic and autocratic governments can and will most likely use the latest advancements in technology for their benefit and to obtain more power and control. The future is a mix of physicality and new virtual selves that are already forming based on biometric information that is captured by every electronic interaction we make today. And our new virtual selves will require new laws, as well as constant monitoring by both ourselves and our governments.

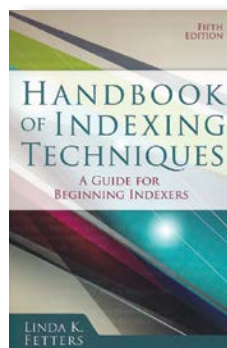
The chapters on the future of terrorism and the military are somewhat unsettling when one considers the new arenas of domination based on our reliance on technology, but again, this future is based on current events. It is inevitable that technology will fracture our lives. However, the ending chapter on reconstruction leaves readers with an optimistic view about the harmony that can exist between our physical and virtual lives. This is not necessarily a book for only technical communicators; it is a good general read for anyone.

Diane Martinez

Diane Martinez is an assistant professor of professional and technical communication at Western Carolina University. She previously worked as a technical writer in engineering, an online writing instructor, and an online writing center specialist. She has been with STC since 2005.

Handbook of Indexing Techniques: A Guide for Beginning Indexers

Linda K. Fetters. 2013. 5th ed. Medford, NJ: Information Today, Inc. [ISBN 978-1-57387-461-8. 180 pages, including index. US\$28.00 (softcover).]



Indexing is a much misunderstood art—or is it a craft? or is it a profession? or is it a business? Yes, all of these. But it can seem a bit mysterious no matter how you think of it. As an indexer myself, I have been surprised at the reactions from people who ask me about my work. The most common attitude is puzzlement as to why a person

needs to go to the effort of creating an index when surely the book generates its own index automatically, as many people mistakenly assume.

Indexes are written; they don't just appear magically when a book is printed. Usually they are written by professional indexers, but in many cases they are written by the work's author or given as an assignment to whoever doesn't duck fast enough.

Linda Fetters' admirably readable book is directed toward those people who are not necessarily indexers—in fact, who usually aren't indexers—who find themselves in the position of having to prepare an index. Her other audience is non-indexers who are interested in entering the profession. Since *Handbook of Indexing Techniques* is now in its fifth edition, this somewhat niche topic must be of some relevance to many people.

Fetters has divided her topic into eight chapters: Learning to Index (education issues), Starting the Index (overview of what to include, audience considerations, and useful reference works), Writing the Index (nuts and bolts of indexing mechanics), Names and Biographies (handling issues specific to these topics), References (locators and cross-references), Finishing Touches (sorting and formatting), Periodicals (cumulative indexes, newspaper and journal indexing), and Electronic Documents (embedded indexing, Web indexing, and software tools). Each chapter ends with a bibliography of sources mentioned within, and there are two superb cumulative bibliographies at the end of the work: one alphabetically arranged; the other classified by topic. The work ends with a competent index. Within

the *Handbook*, readers will find the two case studies—*San Antonio Register* and University of Texas policies and procedures Web index—instructive and useful.

A very few items could have been improved. In a work about indexing, a note concerning the book's own index would have been appropriate. Indexers seldom get recognized in acknowledgments; books on indexing are among the very few exceptions. If Ms. Fetters was the indexer, she should have said so. If someone else was the indexer, that person should have been acknowledged. One is naturally curious.

In general, the work is well edited and indexed, but a few minor inconsistencies have crept in. For example, the HTML/Prep utility is styled with and without the slash. Consequently, the indexer failed to pick up all mentions when compiling the index.

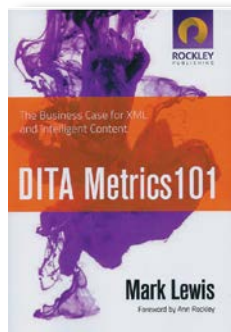
For the target audience of novice and non-indexers, *Handbook of Indexing Techniques* provides an excellent introduction to a larger topic, and its extensive bibliography would be useful even for experienced practitioners.

Karen Lane

Karen Lane is a freelance technical editor, indexer, and coauthor of a technical communication textbook, *Technical Communication: Strategies for College and the Workplace*. She is an STC Fellow and has served on several Society-level committees, as well as serving as program manager for the 2008 STC Technical Communication Summit.

DITA Metrics 101: The Business Case for XML and Intelligent Content

Mark Lewis. 2012. Schomberg, Canada: Rockley Publishing. [ISBN 978-0-9865233-4-2. 150 pages, including index. US\$24.95 (softcover), US\$80.00 for MS Excel worksheets that go with the book.]



Mark Lewis is well-known as a DITA expert, and gives us a wealth of methods for calculating return on investment (ROI) in his book, *DITA Metrics 101: The Business Case for XML and Intelligent Content*. Each chapter provides multiple ways of calculating cost savings for each

level and stage of a content development project. The MS Excel worksheets that complement the book make it easy to customize the metrics for your own projects.

One of the challenges that we continually face in our field is how to quantify what we do. This book goes a long way toward providing consistent ROI metrics for content development. While the book focuses on DITA, you could easily customize these metrics for a variety of use cases involving other flavors of structured authoring or content management systems.

For example, you could use the translation cost model and apply it to any similar situation where you have measurable reuse by using the data from the translation memory tool and whatever CMS you use. The chapter on translation also includes information about typical translation workflows and what to watch out for.

However, the book focuses solely on cost metrics, which is a weakness. While ROI is a significant selling point for DITA and other initiatives, it is not the only requirement, and ROI does not equal improved quality. Having useful and quantifiable quality metrics would also be helpful.

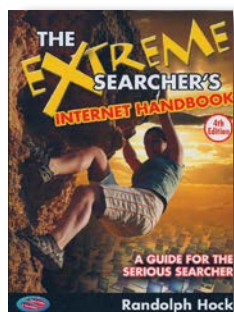
If you get the book, spend the extra money and also get the Excel spreadsheets. They will save you time in setting up your own ROI metrics.

Katherine (Kit) Brown-Hoekstra

Katherine Brown-Hoekstra, of Comgenesis, LLC, is a Fellow for STC and the Society VP, speaks at conferences worldwide, and has authored many articles on various topics related to technical communication and internationalization. She has a background in life sciences and 20+ years of experience. She also coauthored a book on managing virtual teams.

The Extreme Searcher's Internet Handbook: A Guide for the Serious Searcher

Randolph Hock. CyberAge Books. 2013. 4th ed. [ISBN: 978-1-937290-02-3. 320 pages, including index. US\$24.95 (soft cover).]



Google has made it so easy to find things on the Internet that many people never realize that other tools and approaches are available for searching that might yield better results, depending on their needs.

In *The Extreme Searcher's Internet Handbook: A Guide for the Serious Searcher*, Randolph

Hock, a well-known search consultant and strategist, seeks to expand your horizons and introduce you to the many resources and techniques that are available for the serious searcher.

This book, now thoroughly updated for the 4th edition, argues that as useful as the popular search engines are, much of the best information on the Internet lies in the “nooks and crannies” (p. xv) of the “deep Web” (p. 23), where it never gets indexed by automatic search engines, or never makes it to the top of popularity-ranked search results.

In addition, you may have specialized needs which call for superior strategies. If, for example, it is important to ensure that you retrieve from a high quality source, or if your goal is to become familiar with the range of information available in a tightly defined field, you may be better served by specialized directories and sites that select content for reliability and relevancy and classify it by subject area, the way a professional librarian would.

Hock gives a brief history of the evolution of Internet information retrieval strategies and covers the strengths and limitations of the major types of tools that are available, including search engines, directories, and portals. He covers the scope and features of the major tools and offers suggestions for getting the most out of them. He points out often-overlooked features, and describes the use of specialized filtering techniques such as phrase searching, title searching, or limiting a search to a specific site, domain, language, range of dates, or file type.

In “An Internet Reference Shelf” (p. 149), Hock recommends what he considers to be the best sites offering particular categories of information. Besides

encyclopedias, dictionaries, and almanacs, he includes sources for statistics, company, government, and country-specific information, and more. *The Extreme Searcher's Internet Handbook* points to dozens of information-rich sites and notable content collections, and offers techniques for locating others. Finding news (specialized news services, aggregators, RSS feeds), and finding products (catalogues, auctions, product reviews), each get their own chapter.

Not all information is text, of course. Hock covers finding and processing pictures, audio and video, and specialized file types. He also discusses getting information from sources that many of us may never think of as research tools, including discussion groups, forums, newsgroups, blogs, podcasts, and social networks.

For those who want to be information providers, Hock offers suggestions for tools and resources for sharing information.

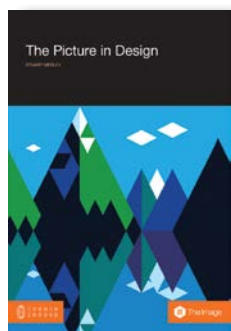
The Extreme Searcher's Internet Handbook includes a glossary of search-related terms. For easy reference, the URLs mentioned in the text are listed at the end of the book, and as links on a companion website.

Patrick Lufkin

Patrick Lufkin is an STC Associate Fellow with experience in computer documentation, newsletter production, and public relations. He reads widely in science, history, and current affairs, as well as on writing and editing. He chairs the Gordon Scholarship for technical communication and co-chairs the Northern California technical communication competition.

The Picture in Design: What Graphic Designers, Art Directors, and Illustrators Should Know About Communicating with Pictures

Stuart Medley. 2012. Champaign, IL: Common Ground Publishing LLC.
[ISBN 978-1-61229-050-8. 168 pages, including index. \$19.12 USD (ebook).]



The Picture in Design: What Graphic Designers, Art Directors, and Illustrators Should Know About Communicating with Pictures is a well-researched complaint about the lack of design theory for illustration in graphic design. When reviewing the history of graphic design schools, Medley notes that “[d]

espite a less didactic approach than the Swiss school, these newer texts still suffer from the bias towards type at the expense of pictures” (p. 60). As part of this bias, Medley discusses how present-day graphic design relies heavily on supposedly unbiased photos over personality-driven illustrations.

Medley writes that illustrators need theories about images to make design decisions beyond blind reliance on photos. He notes that illustrations seem to be making a comeback, but “[i]t is not enough to be surrounded by illustration and to be using it for more design tasks; designers...need to know why they are using it if they are to be confident it is communicating what they think it is communicating” (p. 96). Medley reviews how the brain and eyes work together to see, revealing that less realistic images, like line drawings, are the easiest to read. Medley acknowledges “a paradox is at the heart of this book—that one may communicate more accurately through less accurately rendered images” (p. 112).

Medley writes that there should be guidelines for images in graphic design but not what those guidelines should be. Rather, he discusses his thoughts on the idea of rules. For example, “[a] good diagram should have some rules of a strategy imposed on it...” (p. 85).

Continuing his theory that less realistic images are more easily read, Medley writes how comics portray images and tell stories, quoting McCloud’s theories on storytelling and how action occurs between panels. Regarding color, Medley discusses a comic that uses

“a limited palette [to create] a colour constancy that is rare in nature and helps the reader establish...character identity” (p. 41). He also praises Herge’s *Tintin*, who was drawn in a generic fashion so the reader could be the character, but the world and other characters were more detailed to ground the story. That these cartoony drawings read so well “is due, but ... only in part, to less distraction associated with the over-reading of unintended messages” (p. 28).

The Picture in Design is a thought-provoking book but over-written. It reads like a college research paper, which makes sense given that Common Ground is a university press. The book lacks focus or any meaningful conclusion beyond suggested ideas. The sheer number of references can be daunting. Medley includes more images that lean more towards the artistic side, posters and book covers, rather than technical process drawings. This book could be interesting to discuss with other illustrators or to start your own pondering on how graphic design uses images.

Angela Boyle

Angela Boyle is a technical writer for Tyler Technologies, Inc., where she has worked for seven years. She graduated from the University of Washington with a BS in Technical Communication.

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